The Art of Dispensing

(SEVENTH EDITION).

Now Ready. Price 6/- net. By post, 6/4.

THE first edition of this work was published in September, 1888, and so well was it appreciated that five large editions were issued within two years. Six reprints of the fifth edition were issued up to April, 1898, and in 1900 a sixth edition, revised and enlarged by Peter MacEwan, F.C.S., Pharmaceutical Chemist, Editor of THE CHEMIST AND DRUGGIST, was published. Another edition again being called for, the Editor has taken the opportunity to thoroughly revise the text, introducing factors and formulæ which have been accumulating. The chapter on new remedies has been entirely re-cast, and the specimen page given herewith shows how convenient and useful this chapter will be for dispensers and pharmacists generally. The number of articles dealt with in this chapter has been increased from 250 to 599. The character of the book as a manual for students of pharmacy has been carefully maintained, and forty sets of prescriptions given by the Pharmaceutical Examiners in Edinburgh and London have been included. This new and enlarged edition is to be bound in strong black buckram, gilt-lettered, and published at 6*s.*, or post free 6*s.* 4*d.* The principal wholesale houses will supply it at the published price. In Australia it will be obtainable through our own offices and most of the wholesale houses; in South Africa from Messrs. C. E. Gardiner & Co. (Lim.), Heynes, Mathew & Co., and Lennon (Limited); in Canada from Messrs. Evans & Sons (Limited), Montreal; and in the United States from Messrs. McKesson & Robbins, New York.

NEW AND UNOFFICIAL REMEDIES 403

—is a crystalline solid, soluble in alcohol and ether. The alcoholic solution (ʒj. to ℥j.) is given in 10-drop doses in consumption.

Acid, Phenolboric—

$C_6H_5.B(OH)_2$

—a white water-insoluble powder, used as an antiseptic and disinfectant.

Acid, Phenolpropionic (hydrocinnamic acid)—

$C_6H_5.CH_2.CH_2.COOH$

—is used like phenolacetic acid in consumption, in the same dose and the same way.

Acid, Phenolsulphonic (sozolic acid), $C_6H_2I_2 : OH.SO_3H.3H_2O$, occurs in needle-shaped crystals, easily soluble in water and alcohol. The 2 to 3 per cent. solution in water is used as an antiseptic. See also *Aseptol.*

Acid, Picric.—For malaria in ½ to 2 grain doses (in alcohol), and 1-in-1,000 solution for burns, eczema, and cracked nipples.

Acid, Salicyl-acetic. — See *Aspirin.*

Acid, Santoninic, a white, crystalline principle ($C_{15}H_{20}O_4$), the sodium salt of which is used for intestinal worms. Dose: 1 to 5 grains.

Acid, Sclerotinic.—One of the most active principles of ergot. Occurs as a brown powder, soluble in water. Given by mouth or hypodermically in ½ to 1 grain doses in epilepsy, and as a hæmostatic. There are two kinds, Dragendorff's and Podwyssotski's, but they appear to be closely alike.

Acid, Sulphanilic—

$C_6H_4.NH_2.SO_2.OH.H_2O$

—a white, crystalline substance used in chronic catarrhs. Dose: 5 to 15 grains dissolved in water by the aid of sodium bicarbonate. The sodium salt is in consequence generally used.

Acid, Taurocholic,

$C_{26}H_{45}.NSO_7.$

—In yellowish, crystalline masses, soluble in water and alcohol. Has antiseptic properties.

Acid, Vanadic (V_2O_5), and sodium meta-vanadate are powerful therapeutic agents equalling arsenic in potency. The dose is gr. $\frac{1}{32}$, or by subcutaneous injection gr. $\frac{1}{150}$. Given in chlorosis, rheumatism, and tuberculosis, chiefly as a tonic or appetiser.

Acoin (Alkyloxyphenylguanidine) is a local anæsthetic recommended in place of cocaine, the duration of the anæsthesia being proportionate to the strength of the solution; thus 1 in 1,000 produces anæsthesia of the cornea lasting fifteen minutes, 1 in 200 one hour, and 1 in 40 one day. It is soluble in water. The best solution to use is acoin 1 grain, sodium chloride 8 grains, and sterilised water 18 drachms.

Acopyrin is antipyrin salicylate, and occurs as a white, crystalline powder, feebly soluble in water (1 in 400 cold, 1 in 30 hot), recommended as an antipyretic and antimigraine in the same doses as antipyrin.

Actol.—The fancy name for lactate of silver. A white powder soluble 1 in 15 of water. Is an

PUBLISHED AT THE OFFICES OF

"THE CHEMIST & DRUGGIST,"

42 CANNON STREET, LONDON, E.C.,

And may be obtained through the Wholesale Houses at the Published Price.

THIS WEEK'S C. & D. CONTAINS:

A further instalment of store prices.

This is an educational as well as a Conference Number.

Some good advice is given to students. A Minor man tells how he passed the examination by home study, and another tells his experience in the examination.

In the section dealing with the practice of medicine a doctor who qualified after being thirteen years in business as a chemist tells how he did it.

Concise information is given regarding the dentists' curriculum, and about qualification in veterinary surgery.

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The sale of the B.P.C. Formulary to the Pharmaceutical Society, who propose to incorporate it in a book which they are arranging to publish, occupied three hours of the time of the meeting, a very animated and acrimonious debate having ensued on the motion that the "Formulary" should be sold for seventy guineas. Mr. N. H. Martin, Chairman of the Formulary Committee, moved an amendment, which was finally defeated by forty-three votes against twenty-one.

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AN UNTIMELY END.

Died at the University College, Sheffield, on Tuesday, August 9, at 3.45 p.m., after a painful illness, B. P. C. Form.

Born at Birmingham in 1886, the deceased had attained the age of 18 when his chequered career came to so tragic an end on Tuesday. As an infant he was robust, and his adoring parents, whose declining days he had come to cheer after twenty-three years of married life, were remarkably proud of their child. For the first few years he thrived well, and it seemed as if he would live to a ripe old age. When he was six years old he suffered from a curious, and up to that time unknown malady. Little understood at the time, it has since been traced to the bacillary disease now known as Pharmotor Britaxia, but as the result of prompt transfusion of blood taken from his devoted parents, aided by copious draughts of Letcher's syrup of the hydrobromates, he recovered in some degree his former vigour. A recurrence of the attack was experienced six years later, and recovery was very slow. The unfortunate condition of the patient was aggravated by an unintentional, but none the less harmful hustling of his venerable relative. A new reptile (*Farma shoorna*), and more recently a parasite (*Kompen Dium*) induced a malignant effusion. After some weeks of painful indecision on the part of his relatives, two eminent physicians were called in consultation. They were sharply divided in opinion, one of them strongly recommending the drastic operation known as offcision of the caput, while the other wanted to inject the patient with serum prepared from papyri literati. Much unseemly wrangling took place around the deathbed, and after several hours of severe suffering poor B.P.C. Form expired in the presence of the relatives from the three kingdoms and the principality.

WHERE TO STUDY.

The Following Educational Institutions are advertising in this issue:

School of Pharmacy, The, 17 Bloomsbury Square, W.C.
South London School of Pharmacy, 325 Kennington Road, S.E.
Westminster College of Chemistry, Trinity Square, Borough, S.E.
Metropolitan College of Pharmacy, 160 to 162 Kennington Park Road, S.E.
London College of Chemistry, 323 Clapham Road, S.W.
Imperial College of Chemistry, 49 to 51 Imperial Buildings, E.C.
Central School of Pharmacy, 2 Charterhouse Street, E.C.
Brixton School of Pharmacy, 171 Brixton Road, S.W.
City of London College, White Street, Moorfields, E.C.
Burlington Correspondence College, 8 Crescent Grove, Clapham Common, S.W.
Manchester College of Pharmacy, 225A and 227A Oxford Street, Manchester.
Northern College of Pharmacy, Burlington Street, Manchester.
Leeds College of Pharmacy, Clarendon Road, Leeds.
Royal Dispensary, 21 West Richmond Street, Edinburgh.
Edinburgh Central School of Pharmacy, 26 Clyde Street, Edinburgh.
West of Scotland College of Pharmacy, 157 St. Vincent Street, Glasgow.
Liverpool School of Pharmacy, 6 Sandon Terrace, Liverpool.
North of England School of Chemistry and Pharmacy, 55 Northumberland Street, Newcastle-on-Tyne.
Charing Cross Hospital Medical School, Charing Cross, W.C.
Middlesex Hospital Medical School, Cleveland Street, W.
Royal Dental Hospital, Leicester Square, W.C.
National Dental Hospital and College, Great Portland Street, W.
Royal (Dick) Veterinary College, Edinburgh.
Spectacle-makers' Company, 11 Temple House, Temple Avenue, E.C.
Queen's College, Cork
University of Edinburgh
University of Durham
University of Bristol.
University of Victoria (Manchester)
University of Birmingham
University of Liverpool

Holloway's for the Hair.—A newspaper paragraph is going the rounds to the effect that the late Frederick Goodall, R.A., owed his luck in getting among the Bedouin Arabs, whom he painted so well, to Holloway's ointment. While he was visiting an encampment in the East he was told of a girl of the tribe who had lost all her hair. He persuaded her to remove the wrapping in which her head was swathed, washed it, and then applied some Holloway's ointment. The hair grew again, and Mr. Goodall was a welcome guest for as long as he cared to stay.

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Ten shillings a year in advance, post free to any part of the world, including a copy of *The Chemists' and Druggists' Diary* next published. Single copy, 4*d.*; Summer or Winter Number, 1*s.*; *Diary*, 3*s.* 6*d.* Postal orders and cheques to be crossed "Martin's Bank (Limited)."

AS AN OFFICIAL ORGAN

The Chemist and Druggist is supplied by subscription to the whole of the members of NINETEEN PHARMACEUTICAL SOCIETIES, viz. :—

Pharmaceutical Society of Ireland.

South African Phar. Assocn.
Natal Phar. Soc.
Rhodesia Phar. Soc.
Cape Colony Phar. Soc.
Transvaal Phar. Soc.
Kimberley Chem. Assoc.
Orangia Phar. Soc.
Trinidad, W.I., Phar. Soc.
Central Phar. Assocn., N.Z.
Canterbury (N.Z.) Phar. Assocn.
Otago (N.Z) Phar. Assocn.
N.S.W. Phar. Soc.
Queensland Phar. Soc.
S. Australia Phar. Soc.
Tasmania Phar. Soc.
W. Australia Phar. Soc.
C. and D. Soc., Ireland.
Irish C. A. Assocn.

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A SURE THING.

This is particularly applicable to The Chemist and Druggist Supplement, and we call the attention of all to this week's issue, which has a circulation of 16,500. The Supplement is a splendid medium for advertising all the wants of retailers and wholesalers in respect to assistants and business generally. Terms for advertisements will be found on reference to the Supplement itself, and no one should fail to notice that the disposal of surplus stock by retailers is speedily effected by advertising therein.

Summary.

The British Pharmaceutical Conference met at Sheffield this week. Our report of the meeting begins on p. 301.

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English News.

Local newspapers containing marked items of news interesting to the Trade are always welcomed by the Editor.

Brevities.

At Oakham on August 2, a shopkeeper was fined one guinea, including costs, for selling sweets coated with oxide of iron.

The Wigan Rural District Council have accepted the tender of Mr. Jonathan Phillips, pharmaceutical chemist, for the supply of Sanitas fluid.

The prize of 6*l.* offered at the Corwen Eisteddfod on August 1 for the Essay on "The Recent Discoveries in Science" was won by Mr. E. D. Jones, Medical Hall, Llangollen.

A bull that was being driven along the street at Kingston Cross, on August 5, suddenly entered the pharmacy of Mr. Ruoff. After looking round, he backed carefully out again, and no damage was done.

James Clegg, described as a chemist, of 15 Shrewsbury Road, Oldham (but whose name does not appear on the Register of Chemists and Druggists), was found unconscious on a footpath near Blackpool, and died subsequently in the Kirkham Workhouse.

At a meeting of the Advisory Committee for the Imperial Institute on August 3—Lord James of Hereford in the chair—reports were received and considered relating to the various branches of work carried on at the Institute and extensions of the scope of this work.

On Thursday, August 18, the members of the Cheltenham and District Chemists' Association and their friends will meet at Tewkesbury at 2.45 P.M., whence they will go by steam-launch to Worcester, returning to Tewkesbury at 8.30 P.M. Tickets for launch and tea, 5*s.* each, from the Hon. Secretary, Mr. J. Arden Thomas, College Pharmacy, Cheltenham.

Having stolen two bottles of hair-dye from the shop of Mr. Lewis Thompson, chemist, Dover, a man named John Elder went in next door and offered the bottles for sale. The shop belonged to the same proprietor, and the manager, knowing that similar dye was sold next door, ascertained that two bottles were missing. Elder was arrested, and on August 4 was sentenced by the Dover Bench to fourteen days' hard labour.

In the City of London Court on Tuesday, August 9, before Mr. Assistant-Registrar Tattershall, Schindler & Co., fancy-goods importers, 9 Aldermanbury Avenue, sued Mr. F. W. Turton, 23 Thavies Inn, for the sum of 1*l.* 4*s.* 6*d.* in respect of atomisers which the defendant should have delivered to them and which he had not so delivered. The Assistant-Registrar, after hearing evidence, adjourned the case for the plaintiffs to add the defendant's father to the proceedings.

British Association.

The annual meeting of the British Association is to be held at Cambridge from August 17 to 24, when the Right Hon. Arthur Balfour, First Lord of the Treasury, will be present. The arrangements are now complete. Professor Tschirch, of Berne University, is one of the foreign men of science who have been invited to attend the meeting, and he has accepted as the guest of the Chemistry Section. Professor Isidor Traube, of Berlin, is another guest, and will communicate a paper to the Section on the velocity of osmosis and on solubility. Dr. G. Barger, of the Wellcome Physiological Research Laboratory, is to read a paper on saponarin, a glucoside which is coloured blue by iodine. Agriculture is for the first time to be a sub-section of the Botany Section.

Doctors and Spectacle-makers.

At the Annual Representative meeting of the British Medical Association at Oxford, one of the subjects discussed was eyesight-testing by spectacle-makers. The Chairman said, with regard to the action of the Spectacle-makers' Company in granting certificates and diplomas in sight-testing, that the question whether a medical man should take the position of medical examiner for such a diploma had come before the Ethical Committee, which had reported that it was unethical for a medical man to take part in such an examination, and that report had been debated by the Council. A representative said the present state of things was entirely due to the fact that general practitioners did not test patients for spectacles, but sent them to local infirmaries. Some people did not care to go to such institutions, and went to spectacle-makers instead, whom they regarded as specialists in eye-testing. He suggested that universities and schools should educate students in sight-testing. Dr. Tatham Thompson, of Cardiff, thought it their duty to raise their voice to protect the British public and the ophthalmic surgeon who was trying to get an honest living. Dr. Ward Cousins endorsed the statement in regard to the use of mydriatic drugs, and even atropine, by spectacle-makers. In answer to a question the Chairman stated that if the new Medical Acts Amendment Bill was passed men practising under the Spectacle-makers' diploma would be liable to prosecution. He further stated that they had had certain inquiries from medical men who had been asked to become examiners to the Spectacle-makers' Company as to what the attitude of the Association would be. He assumed that now the terms of the report were known those members would not take office under the Company. A motion approving the conclusions of the committee was then adopted. A memorandum was submitted, prepared by the Medico-Political Committee, which the Council had forwarded to the Privy Council expressing, on behalf of the Association, its disagreement with the report of the Departmental Committee which practically proposes to abrogate many of the provisions with regard to poisons by making changes in Schedule A of the Pharmacy Act, 1868. The action of the Committee was approved.

Apothecaries' Assistants' Examination.

The following candidates have been granted the certificate of qualification to act as an assistant to an apothecary in compounding and dispensing medicines: G. W. Barfield, K. E. Bath, E. M. Binney, E. Bowler, C. Chamberlain, G. E. Clarke, O. Cohen, A. E. J. Collinge, E. Cook, M. Cowan, E. H. Cutler, S. F. Dalley, B. Davis, H. M. Dawson, C. MacA. Duncan, R. F. Edmunds, E. C. C. English, J. A. Firth, H. F. Hammond, M. B. Healy, W. Knott, H. Lancaster, E. S. P. Laycock, L. J. McGlashan, C. R. B. Mann, F. A. Mason, M. N. Miller, I. E. Mills, M. C. Nesbit, G. F. D. Newman, M. Nicolls, H. L. Oates, D. V. Pace, T. Pearman, F. M. Pinck, J. G. Protheroe, H. C. Richards, M. Robinson, E. Sargent, H. M. Shacklock, E. M. J. Steadman, G. E. Stevens, R. M. Stretton, G. I. Sworn, A. E. Tompkins, M. Toovey, F. Tuke, A. F. Waind, V. M. Walden, M. Wassall, J. Williams, A. I. Wood.

Analysts' Reports.

The only samples of drugs taken at Hastings last quarter under the Food and Drugs Acts were three of cod-liver oil and two of camphorated oil: all were genuine.

The only sample of drugs found to be below the B.P. standard at Rochdale last quarter was one of sweet spirit of nitre, which was deficient in ethyl nitrite to the extent of 20 per cent.

No samples of drugs were taken under the Food and Drugs Acts in Cheshire last quarter, but one sample of soda-water contained only 7 per cent. of the proper proportion of sodium bicarbonate.

Reporting to Bradford City Council, the public analyst states that one sample of essence of peppermint taken for analysis was found to contain 23 per cent. of water in excess of the proper proportion; one sample of glycerin contained $\frac{1}{50}$ grain of arsenic per lb., and one sample of ground ginger was found to contain 2 per cent. of sand, which had no doubt come from uncleansed ginger-rhizomes.

The Sale of Mist. Ferri Co.

An adjourned inquest was held at Dawlish on Monday on the body of Fanny Elizabeth Andrews (29), a domestic servant, who died in the Dawlish Cottage Hospital. Medical evidence showed that death was due to pelvic peritonitis through taking nauseous drugs. Deceased had taken a mixture, forwarded in response to an order by post by Mr. A. Christie, chemist, 2 Queen Street, Newton Abbot. Mr. Christie said the mixture was prepared according to the British Pharmacopœia, and contained sulphate of iron, carbonate of potash, myrrh, and essence of nutmeg. He was not aware of deceased's condition. Dr. Lovely said deceased admitted to him that she had been taking a lot of pills, medicine, and salts, and latterly a green mixture obtained from Newton. Recalled, Mr. Christie said he sold the green mixture without inquiries. It was not obligatory on the seller to make inquiries or to make an entry in his book, but if the case is at all suspicious chemists do not sell the mixture. It would not have done any harm if the woman had not taken other things besides. The foreman of the jury suggested that people in the same condition as deceased might perhaps have a little more protection. Before selling the mixture some inquiries might have been made as for what purpose the mixture was required. Witness replied that that class of people did not always tell the truth. The Coroner said if a woman went to Mr. Christie's shop and said she wanted a certain mixture, and Mr. Christie prescribed for her, that would place Mr. Christie in a wrong position. But getting a letter from a person, enclosing a shilling and threepence for postage, as was done in that case, was a different thing, and Mr. Christie was quite within his rights in supplying. The jury agreed, and found that deceased died from pelvic peritonitis, following abortion, the result of taking drugs.

Store-prices.

The following alterations in prices appear in the price-circular of the Civil Service Stores for August :

Added.—Abbey's salt (1*s.* 4*d.* size), 1*s.* 2*d.*; Armstrong's aseptic feeding-bottles, 8½*d.* each; lemon kali, 7*d.* per 1-lb. bottle; Sanatogen, 2-oz. bottle, 2*s.* 6*d.*; 4-oz., 4*s.* 6*d.*; 8-oz., 8*s.* 6*d.*; Tidman's sea-salt, 9½*d.* per doz. penny packets.

Reduced.—Camphor in 1-oz. tablets, 2½*d.* per tablet, 3*s.* per lb.; in blocks, 9*d.* per ¼ lb., 1*s.* 6*d.* per ½ lb., 2*s.* 10*d.* per lb.; sarsaparilla-root, 2*s.* 4*d.* per lb.

Revised.—Benger's food, 1*s.* 3*d.* and 2*s.* per tin; bovinine, 2*s.* 6*d.* and 4*s.* per bottle; poppyheads, 3½*d.* per dozen; Pritchard's pills, 11*d.* per box.

Benger's liquor pepticus and liquor pancreaticus and Warner's Safe Cure have been taken out of the list.

Bound Over.

At the Southwark Police Court on August 9 Herbert Morrison (26), chemist's assistant, of Hercules Road, Lambeth, was charged, on remand, with stealing two marked shillings, belonging to his employer, Mr. William James Green, chemist and druggist, of 36 Lower Marsh, S.E. The prosecutor said the prisoner had robbed him of about 5*l.* When he engaged the prisoner five weeks ago he told him that he had suffered from both drunken and dishonest assistants and that he regretted that he did not prosecute the last man who robbed him. He mentioned that to the prisoner as a warning, and the prisoner replied, "I am not a scamp; I'm the son of a clergyman of the Established Church." During the remand the prisoner had sent him a letter, in which he said he had heard that the witness proposed to ruin his prospects and character by "publishing him" in The Chemist and Druggist. What the witness had said was that if the case was reported in The Chemist and Druggist it would be a warning to other chemists. Mr. Cecil Chapman (magistrate) said he would deal with the prisoner as a first offender because of his previous good character and for the sake of his parents. The prosecutor had exercised his duty to the public in bringing the prisoner before the Court because masters were being continually robbed by men who passed from one to the other with excellent characters. The tone of the prisoner's letter to the prosecutor was very unsatisfactory. In return for the kindness the prisoner had received from his master he threatened him with an action for slander. The prisoner was bound over to come up for judgment if called upon.

"Watering the Pitch."

A smart advertising handbill was issued by Camwal (Limited), at Leeds, on the occasion of the recent cricket match Lancashire *v.* Yorks. It was alleged in a previous match at Harrogate that the pitch had been tampered with by watering during the night, with the result that the match had to be abandoned. The incident created a considerable stir in cricketing circles, and "Camwal" took advantage of it in an ingenious way. The handbill was entitled "Watering the Pitch," and comprised a picture depicting a cricketer receiving a drink from an umpire out of a Camwal syphon, some of the water being spilt on the pitch in the process. This was offered as an explanation of the incident, and caught on, 10,000 copies being distributed, doubtless with much advantage to Camwal waters.

At the International Exhibition held at the Crystal Palace this month, a prize medal for mineral waters has been awarded to Camwal (Limited).

The Coroner and the Chemist.

Mr. George Croft, Grimsby's octogenarian chemist, and the Borough Coroner (Mr. Thos. Mountain) had a sharp passage of arms at an inquest held on August 8. The inquiry was about the death of George Goldsborough, aged fifty-one. About two months ago deceased was removing a wooden case in a workshop, when it slipped and fell on his foot, crushing it. At the time he did not think it serious, and refused to see a doctor. He, however, went to see Mr. Croft, who gave him a tonic. On August 5 he was taken worse, and died two days after. Mr. Croft stated that when he examined deceased's foot he saw the man was suffering from gangrene, but he did not think it was serious. At the time witness was of opinion he could cure him. He prescribed some tonic medicine for him. In reply to the Coroner, the witness said it did not occur to him that deceased ought to have seen a doctor at first, as he thought he was master of the wound.

The Coroner : Don't you think you would have taken a wiser course if you had decided not to treat him at all and sent him to a surgeon?—Witness : Probably, because then I should have taken no risk and should not have had to appear here. I have had experience in these matters since 1837.

Don't you think it would have been better for him to have seen a surgeon?—Don't put that question to me.

It did not occur to you that you might jeopardise your liberty?—Oh no. Witness, continuing, said the gangrene did not appear to be sufficient to warrant any operation. It was a question of constitution. Had the man's system been in a healthy state he would have thrown it off.

Dr. Duncan deposed that amputation was the only possible means of saving the deceased's life, and had the man seen a doctor at the first he could have been cured.

The jury returned a verdict that death had been caused by accidental injury.

An Order for a Facia.

At the Thames Police Court on August 10, William Lee was committed for trial on a charge of obtaining 2*l.* 10*s.* by false pretences from an engraver in Mile End Road, E. Accused went to the prosecutor and produced an order purporting to come from Mr. Jonah Milner, chemist and druggist, Woolwich Road, Greenwich, for a facia at a cost of 16*l.* The prosecutor, believing the order to be genuine, paid the prisoner 2*l.* 10*s.* as commission. Mr. Milner gave evidence that the order was on one of his billheads, but he did not authorise prisoner or anyone else to write it, nor did he write the order himself.

The Week's Poisonings.

Fourteen fatalities from poisoning have occurred since our last report, all but one being suicides. The solitary misadventure took place at Brampton, where a colliery-labourer, Ernest Bradshaw, accidentally drank a poisonous liniment. Two cases of oxalic-acid poisoning took place, one victim being Henry Chapman, a Camberwell waiter, and the other James Hannington, a Brixton barman. Two deaths from salts of lemon have occurred, William Oates, a Barnsley butcher, taking that means of ending his life, while the other suicide was Sarah Jane Taylor, a Liverpool domestic servant. Carbolic acid killed Annie Hall, of Castleford, and Arthur Poole, of Newcastle-on-Tyne. Dr. Benjamin Gowing, of Forest Fach, near Swansea, died from morphine-poisoning at Maidenhead; a bottle of morphine tabloids was found in his pocket. An unknown woman died at Manchester from the effects of laudanum-poisoning. John Read (60) died in Walsall Hospital from strychnine-poisoning; he had taken rat-poison. Two cases of prussic-acid poisoning and two of poisoning by cyanide of potassium are reported. The acid was taken by John Swan, of Alnwick, who had some experience as a chemist, but who latterly had been acting as clerk to his father, a local auctioneer, and by John Parke, of Acton, who had for some years practised as a medical man. The cyanide-poisonings were at Highbury, the victim being Albert Henry Sly, a gilder, and at Ashford, where the body of Harry Sturt, a Canterbury postman, was found, and beside it two pieces of paper labelled "Poison" and bearing the name and address of Mr. F. W. Stedman, chemist, High Street, Ashford. The cyanide was obtained for photographic purposes.

Irish News.

Local newspapers containing marked items of news interesting to the Trade are always welcomed by the Editor.

Pharmaceutical Society of Ireland.

The following candidates were successful at the Pharmaceutical Assistant examination held in Dublin on August 8: P. J. Cosgrave, D. C. Glenn, and J. M. McKay.

The L.G.B. Confused.

The Local Government Board have written to the Castlerea Guardians relative to a quantity of a certain tincture which was reported by the drug-analyst to be below the standard. The Board stated that the drug appeared to have been delivered at Ballenlough dispensary on May 30, and they now wanted to know why the Guardians had at a previous meeting called on Messrs. Boileau and Boyd to replace the drug when Messrs. Thacker & Hoffe, of Dublin, were the drug-contractors for the current year. The Clerk stated that the tincture was ordered at the end of last year from Messrs. Boileau & Boyd, who were then the contractors, but it was not delivered till May, hence the confusion.

Fire.

The soap and chandlery works of Messrs. David Brown & Sons (Limited), at Donaghmore, co. Tyrone, were completely destroyed by fire on August 5. The damage is estimated at over 20,000*l.*

A Surcharge on Jeyes.

At a meeting of the Rathdown Board of Guardians last week a letter was received from the Local Government Board surcharging three of the Guardians 4*l.* 6*s.* for payment of 6*d.* per gal. above wholesale price in respect of an account for Jeyes' fluid. An appeal against the surcharge was sent to the Board, and hopes were expressed that the matter would be reconsidered in the light of the explanations furnished.

No Extras.

Sir Charles Cameron has applied to the Kerry County Council for special payment over and above his ordinary fees as county analyst on the ground that thirty-nine analyses made by him last year were not contemplated at the time of his appointment. His usual fee is a guinea for each case, the chemicals used costing 4*s.* He asked a refund on at least the out-of-pocket expenses—viz., thirty-nine analyses at 4*s.* each, equal to 7*l.* 16*s.* The request was refused on the ground that the claim was covered by the salary paid to him.

Analysts' Reports.

The drug-analyst has furnished an unfavourable report on the sample of linimentum camphoræ submitted to him by the Mullingar Guardians.

Sir Charles Cameron has furnished a report to the Clonmel Corporation stating that he analysed fifteen samples of drugs for the Clonmel Guardians during the quarter ended June 30. Two samples of the drugs were below the standard in solids. For the Clonmel District Asylum two specimens of turpentine were analysed. They were adulterated with at least 70 per cent. of paraffin.

Irish Preferred.

At a meeting of the Londonderry Guardians on August 6, it was unanimously agreed that in all future contracts for supplies to the workhouse preference be given, other things being equal, to goods of Irish manufacture. Some of the Guardians stated that this was the way to encourage Irish industries, and a hope was expressed that public bodies and individuals throughout the country would follow the example.

A Small-pox Scare.

In connection with the outbreak of smallpox at Armagh much feeling has been aroused by the inability of the local dispensary officers to vaccinate persons coming from the infected areas owing to a failure of the Local Government Board to supply a sufficient quantity of lymph. Immense crowds were on August 6 turned away unvaccinated, and although the medical officer telegraphed and wrote for 800 tubes of lymph only 200 were received. A further urgent requisition for 500 tubes evoked only 100, with the result that a panic prevailed among the people. Mr. A. C. McBride, L.P.S.I., Armagh, offered to supply 1,000 tubes and so meet the demand.

Scotch News.

Local newspapers containing marked items of news interesting to the Trade are always welcomed by the Editor.

Co-operative Drugs.

At a meeting of the directors of the Northern Co-operative Company, Aberdeen, held last week, notice was given of a motion asking for the appointment of a committee to consider and report as to the desirability of acquiring in a central district a shop for the sale of drugs.

A Chemist J.P.

Mr. James Black, chemist and druggist, Leslie, Fifeshire, has been made Justice of the Peace. Mr. Black belongs to Milton of Balgonie, in the parish of Markinch, being the only son of Mr. Thomas Black, for thirty-three years teacher there. He served his apprenticeship as a chemist in Markinch, and was afterwards three years with Messrs. Duncan, Flockhart & Co., Edinburgh. He started business in Leslie in 1872. Mr. Black always took an interest in education. He joined the School Board in 1888, and is now Chairman. His outstanding work has been in connection with the Y.M.C. Association. He was one of the founders of the Leslie Branch, and largely through his efforts the membership has been kept up, and handsome buildings have been erected to which an addition will shortly be made at a cost of 800*l.*

East Stirlingshire Medical and Pharmaceutical Bowling Association.

The second round has just been completed, and the draw for the third round made in the competition promoted by this recently-formed Association. The following are the results up to date. In the first round:

Mr. Robert Marshall, Grangemouth, beat Mr. Andrew Forrester, Falkirk.
Mr. J. C. Beeby, Falkirk, scratched to Dr. Stewart, Falkirk.
Mr. Thomas Lyon, Falkirk, scratched to Mr. R. G. Drummond, Falkirk.

The others received byes. In the second round:

Mr. James MacNiven, Grahamston, beat Dr. Stewart.
Mr. J. W. Bennie, Polmont, beat Mr. J. Cochrane, Grangemouth.
Dr. Wood, Grangemouth, scratched to Mr. Andrew Geddes, Camelow.
Dr. Smith, Falkirk, beat Mr. Marshall.
Dr. Watt, Falkirk, beat Mr. Robert Sinclair, Falkirk.
Dr. Gardner, Grahamston, beat Dr. Fraser, Falkirk.
Mr. J. J. Forbes, Denny, beat Dr. Mitchell, Camelow.
Dr. McCracken, Grahamston, and Mr. R. G. Drummond (to play).

The ties are to be played on or before August 20. In the consolation competition the ties are to be played on or before the same date.

East Indian News.

A New Ordinance has been introduced into the Ceylon Legislature, to provide for the registration of medical practitioners in Ceylon.

Estate Dispensaries.—The Ceylon "Gazette" of July 15 notifies that thirty-two estates (names of which are given), having provided dispensaries and secured the services of dispensers, are entitled to drugs free of charge.

Indian Government Quinine.—The new draft rules regarding the sale of Government quinine at post-offices in India is published as an appendix to a Government Order, which states that the rules are approved by Government, and that they will be published in the "Fort St. George Gazette," and in all district Gazettes, when the date of inauguration of the new system is determined.

Pharmaceutical Society of Ireland.

Council-meeting.

The Council met at 67 Lower Mount Street, Dublin, on Wednesday, August 3, at 3 o'clock. The President (Mr. Johnston Montgomery) took the chair, and the other members present were the Vice-President (Mr. W. T. Wells), Mr. Smith (Treasurer), and Messrs. G. Beggs, White (Sligo), Baxter (Coleraine), Moffitt (Belfast), Brown, and Professor Tichborne.

A Recent Case.

The President said they had had a prosecution in Carrickfergus against a young man who commenced business without having any qualification—even that of a registered druggist. He (the President) accompanied Mr. Donnelly, the Council's solicitor, on the occasion. The defendant set up an ingenious defence—namely, that he did not compound the prescription. He said the inspector handed it in to him, and he said that he could not compound, but that he would make him up another bottle. He accordingly made him up a bottle containing things that were not in the prescription. The bottle was produced in court. There was a registered druggist on the Bench who detected chlorodyne in it; and the Magistrates decided that the defence was not a good one. The Council pressed for two convictions of 5*l*. each, but the Bench gave only one conviction of 5*l*., with 20*s*. costs; and Mr. Donnelly withdrew the other summons.

Correspondence.

A letter was received from Mr. Robert H. Clay thanking the Council for their kind resolution of sympathy with him and his family on the occasion of the death of his late father, Mr. R. K. Clay. On the motion of Mr. Beggs the letter was inserted on the minutes.

A letter was read from Dr. Donald MacAlister, Chairman of the Pharmacopœia Committee of the General Medical Council, stating that, in view of a revision of the Pharmacopœia, committees were being appointed to whom questions were to be referred for investigation and report, and inviting the Council—in co-operation with the Council of the Pharmaceutical Society of Great Britain—to nominate expert pharmacists to act on the Committee on Pharmacy. On the motion of Mr. Beggs, seconded by Mr. Smith, a committee was appointed to select two or more persons to serve on the committee in question.

Wants Remission.

A letter from the Under-Secretary, Dublin Castle, enclosed a copy of a memorial which the Privy Council had received from James Alexander, asking for a remission of two fines of 5*l*. each which had been imposed on him at Templepatrick, co. Antrim, for two illegal sales of laudanum.

The President said that this was rather an aggravated case. The defendant, a publican, was prosecuted by the inspector of weights and measures for selling poison. The evidence showed that a bottle of laudanum was kept on a shelf along with the alcoholic refreshments, and the article purchased was supplied without being labelled "Poison."

The Vice-President said the memorial of the defendant stated that he was a farmer, grocer, and spirit-dealer, and that he had been in the habit of selling small quantities of laudanum to farmers to administer to sick cattle, and for that purpose only, and that he was not aware that he was in any way acting contrary to law. He had never been cautioned against doing so, he said, although his shop had been frequently visited by the inspector. It was proved at the trial that the complainant in the summons had previously told defendant's wife to take the bottle containing the laudanum out of the window, but she never informed him of this; and the evidence of the inspector was that the bottle was never in the shop-window. Defendant further said that he had ceased selling the laudanum. But these statements, the Vice-President said, were altogether contrary to the facts, and he thought the Council should ask the Lord-Lieutenant not to remit the penalties. It was one of those cases in which he ought not to reduce them. The inspector's report stated that when he went into the shop on the first day he saw a few chemists' measures in the shop-window, and found that they were used for the sale of laudanum and spirit of nitre. He inquired for laudanum, and found that it was placed on a shelf behind the counter. He purchased $\frac{1}{2}$ oz., and the bottle containing it (on the shelf) was labelled "Laudanum." He also purchased $\frac{1}{2}$ oz. of spirit of nitre. On a subsequent day he purchased another $\frac{1}{2}$ oz. of laudanum, and the defendant said he had been selling it for several years; and he also said that women sometimes bought a pennyworth for toothache. None of the bottles handed to him had any label on it. A copy of the inspector's report should be sent to the Lord-Lieutenant, with the expression of a hope that his Excellency would let the law take its course.

On the motion of the Vice-President, seconded by Mr. Smith, it was resolved that a letter should be written to the Lord-Lieutenant to that effect.

A letter was read from the Privy Council office acknowledging a receipt of a copy of the new regulation relating to the voting for members of Council at the annual meetings.

The Register as Evidence.

A letter from Messrs. Newton & Lyons, solicitors, of Sligo, reported the result of the Coolaney prosecutions, in which they had acted for the Council. The letter stated that there were two summonses against each of the defendants, Messrs. Henry and Coleman—one for unlawfully keeping open shop, and the other for unlawfully selling poison. The summons against Mr. Henry for keeping open shop was first taken up. The Magistrates held that the word "poison" in the summons was too indefinite, and amended the summons by inserting the words "Bigg's sheep-dip." The Society's "Calendar" was then offered in evidence to show that the defendant was not named in the Register of Pharmaceutical Chemists; but it was objected that under Section 27 of the Pharmacy Act, 1875, the "Calendar" was not evidence unless it was certified under the hand of the Registrar and countersigned by the President or two members of the Council. The Magistrates allowed this objection, and dismissed the summons without prejudice; and they adjourned the other summons against Mr. Henry for an alleged actual sale, and the two summonses against Mr. Coleman, until October. The Magistrates were asked to state a case, and consented to do so.

The Vice-President said that in former prosecutions they used to produce the original Register of Pharmaceutical Chemists in court. Afterwards they began to produce a copy of the "Calendar," and it used to be accepted. On one occasion it was held by the Magistrates that it lay on the defendant to show that he was named in the Register. Now they were told by the solicitor for the defendants in the present prosecutions, that he would use every technical point to try to upset them. That being so, they could in future either produce the original Register in court or a countersigned copy. The words of Section 27 of the Act of 1875 were :

> "and printed copies of such Register for the time being in force, purporting to be so printed and published as aforesaid, or any extract therefrom, or from the original Register, certified under the hand of the said Registrar, and countersigned by the President or two members of the said Council, shall be evidence in all courts," &c.

After some discussion, on the motion of the Vice-President, seconded by Mr. Smith, it was decided to refer the proceedings to Mr. Gordon, K.C., M.P., for his opinion as to the course to be taken.

The committee of the Missouri Botanical Garden were thanked for a copy of their Fifteenth Report, 1904.

On the motion of the Vice-President, seconded by Mr. Johnston, Messrs. J. H. Hegarty (Londonderry), J. J. McHugh (Athy), and J. S. Scott (Belfast) were elected members of the Society.

On the motion of the Vice-President, seconded by Mr. Beggs, Mr. G. S. Perry (Rathdowney) was elected as an associate druggist.

Other business having been disposed of, the Council adjourned.

Legal Reports.

Supreme Court of Judicature.

"Absorbine" Appeal.

In the Court of Appeal on August 5, before Lords Justices Vaughan Williams, Romer, and Cozens-Hardy, Mr. Younger, K.C., mentioned the case of Christy & Co. *v.* Tipper & Son, in which the plaintiffs appealed against the decision of Mr. Justice Joyce. The action was one for an injunction to restrain Messrs. Tipper & Sons, of the Veterinary Chemical-works, Birmingham, from selling embrocation under the name of "Absorbine," and his Lordship had dismissed the action. Mr. Younger, who appeared for the respondents, said the case is a long one, and he suggested that it should not be taken this sittings. Their Lordships concurred, and the case accordingly stands over till next term.

Pharmacy Act 1868.

"XL-All Insecticide."

At the Mansion House, London, on August 8, before the Lord Mayor, Messrs. William Parton (Limited), ironmongers, &c., 94 and 95 Queen Street, E.C., were charged under the Pharmacy Act, 1868, with having sold a preparation of nicotine, a poisonous vegetable alkaloid, (1) not labelled with the name of the article and the word "poison," (2) to a person unknown to the seller, and (3) without making the statutory entry in a book kept for the purpose. Three penalties were claimed, all under Section 17 of the Act.

Mr. Vaughan Williams, barrister, appeared to prosecute on behalf of the Registrar appointed under the Pharmacy Act, and Mr. T. G. Dobbs, solicitor, Worcester, represented the defendants.

Mr. Vaughan Williams said the substance sold ("XL-All Insecticide"), though declared on the label "the most safe and efficacious insecticide yet discovered," was a most dangerous poison. Besides the statement just quoted there was another small label on the bottle, printed in red, which directed the attention of the users of the insecticide to the desirability of wearing rubber gloves when it was used with a sponge, as it contained nicotine and might have an injurious effect on the hands. This, said counsel, was misleading, as it would suggest to anyone not a chemist that the danger was limited to the effect on the skin. He thought he should satisfy his Lordship that the article was a most dangerous one, and that it had been sold without any proper precautions, and in that case he asked that such penalties should be imposed as would deter other people from selling it in this way. A penalty had previously been imposed in a similar case in that court——

Mr. Dobbs objected. The previous case could not be evidence. Besides, the circumstances were quite different.

The Lord Mayor said as he had to be judge and jury, he should like to hear the facts of the previous case.

Mr. Vaughan Williams said the case he referred to was brought against Jacob Wrench & Sons (Limited). The article may not have been quite the same as this; it was called "XL-All Fumigator"; this was called "XL-All Insecticide." But both were preparations of nicotine, and it was then held that such a preparation came within the mischief which the Act was intended to prevent. He should prove that the bottle purchased contained sufficient poison to kill from seventy-five to a hundred and fifty persons, and it was a very serious matter that such a deadly article had been sold without even the word "poison" occurring on the label.

Counsel called his first witness, the purchaser of the article, but

Mr. Dobbs said he would like first of all that the person who laid the information should be called. Mr. W. H. Quarrell, of the firm of Flux, Thompson, Quarrell & Co., was therefore sworn. In reply to Mr. Dobbs, he admitted that his firm were solicitors to the Pharmaceutical Society. Mr. Dobbs contended that as he acted in that capacity it was not competent for him to lay the information.

Mr. Vaughan Williams said anyone might lay an information under Section 17. The Lord Mayor overruled the objection.

Mr. Steer then proved the purchase. He went to the defendants' shop on July 4 and asked for the insecticide. He was told it was not in stock, but that it could be obtained for him. He paid 2*s.* for a pint bottle, got a receipt, called the next day and was supplied with the article. He was not acquainted with the assistant who served him, and did not suppose that the assistant knew him. He was not introduced, and he did not sign any book.

Cross-examined, witness said he was not a spy, though it might be the case that he made purchases for the Pharmaceutical Society with a view to prosecutions. He did not tell the assistant who served him that he came from the Pharmaceutical Society, nor did he caution him in any way. The assistant said, "We haven't it in stock." He did not say, "We don't keep it in stock." Witness did not know where the defendants got it from. They might have got it from a chemist. He did not say for what purpose he bought it.

Mr. H. Moon, assistant to the Registrar, proved receiving the bottle from the last witness and sending it to Mr. Tickle for analysis.

Mr. Thomas Tickle, B.Sc., F.I.C., and analyst for Exeter, said he had analysed the contents of the bottle and found therein 240 grains of nicotine. The capacity of the bottle was 0.93 of a pint. That would correspond to about 260 grains to the pint. Nicotine is a highly poisonous vegetable alkaloid. Two to three grains would probably prove a fatal dose.

The Lord Mayor said he did not see nicotine named in the Act. Mr. Vaughan Williams referred him to that part of the schedule which named strychnine and all poisonous vegetable alkaloids.

In cross-examination Mr. Tickle said he did not make a complete analysis of the insecticide, but he found that it also contained soft soap. The soap admixture would not reduce the poisonous character of the nicotine. It might be possible to extract enough nicotine from a half-pound tin of "Navy Cut" tobacco to kill oneself, but the best tobaccos contain very little nicotine. He did not think green paints as generally sold now contained arsenic.

Dr. A. P. Luff, M.D., B.Sc., L.R.C.P., F.I.C., Lecturer on Forensic Medicine at St. Mary's Hospital, and Honorary Scientific Adviser to the Home Office, said nicotine is a highly poisonous vegetable alkaloid. One drop had been known to kill a full-sized rabbit in 3½ minutes. A teaspoonful of this solution would probably be fatal to an adult in a few minutes.

Mr. Dobbs, for the defence, said that in addition to the point on which his Lordship had overruled him, he wished to argue the case on three or four grounds. First, he objected strongly to the mode in which the Pharmaceutical Society obtained evidence in these cases by means of spies. If there was an offence, it was only a technical one; and if his Lordship held that a technical offence had been committed, he trusted he would exercise his discretion and dismiss the summons under Section 16 of the Jurisdiction Act. But there was a great matter of principle involved in this prosecution. The Pharmacy Act was only intended to apply to poisons when retailed, dispensed, or compounded by chemists as medicines. It was never intended to include such articles as sheep-dips and weed-killers, in which the danger does not arise until they get into the purchasers' hands, and then the danger is just the same whether the article is bought from a chemist or from anyone else. He also directed attention to Section 15 of the Pharmacy Act, and referred to the decision of the House of Lords which established that a company was not prohibited from selling poisons. He believed it had never been decided in any subsequent case that a company could be held liable under Section 17, though he knew that there were judicial dicta in the other case pointing that way. But he insisted that there had been no case in which any substance not of a medicinal character, except one when Battle's Vermin-killer was the poison, had been held to be a poison. The substance on which the present action was founded was not a medicine to be administered, and therefore did not come within the meaning of the Act. The preamble said the chemist and druggist was to have a "practical" knowledge of his business. If that meant he was to have a practical knowledge of vine-dressing, then this might be a poison within the meaning of the Act.

Mr. Vaughan Williams : Read Section 2 of the Act. That defines poisons.

Mr. Dobbs contended further that tobacconists could not sell tobacco, or ironmongers paint, if the Act were to be stretched in this way. The Pharmaceutical Society brought these actions not in the interests of the public, but in the interests of their own members. Mr. Dobbs then began to quote from the Departmental Report of the Privy Council, to which Mr. Williams objected, though he said his friend might adopt arguments stated therein as his own. What Mr. Dobbs wanted specially to quote was a statement in the majority report that the development of agricultural and horticultural poisons was not foreseen when the Act of 1868 was passed, and the recommendation that other traders might sell such compounds.

Mr. Vaughan Williams : With proper precautions.

Mr. Dobbs then detailed the proceedings in "Pharmaceutical Society *v.* White," and contended that Partons were, like White, only the channel through which the order passed, and that therefore they were not the "sellers."

The Lord Mayor said the cases were not parallel, but Mr. Dobbs argued at some length that they were. Lastly he quoted Mr. Justice Lush in "Berry *v.* Henderson" (5 L.R. Q.B.D., page 302) to the effect that the language of the section did not justify the imposition of a double penalty for the same offence. But he hoped that if his Lordship considered that any offence had been committed he would dismiss it as a merely technical one, especially as no notice had been given to the defendants by the Pharmaceutical Society.

Mr. Vaughan Williams : An Act of Parliament is notice to the whole world.

For the defence only one witness, the assistant who sold the insecticide, was called. His evidence exactly confirmed that of the purchaser. Mr. Dobbs said Mr. Whiffen was in court and would prove that nicotine could be extracted from ordinary tobacco, but the Lord Mayor said it was not necessary.

The Lord Mayor said it had been clearly proved that the substance was a deadly poison, but he thought the defendants had sold it innocently. The Pharmaceutical Society were quite right in bringing the action, as very serious danger might arise from such a compound. He thought, however, the case would be sufficiently met by a single penalty, 5*l.* and five guineas costs.

Mr. Vaughan Williams : That carries convictions on all the charges?

The Lord Mayor : Yes.

Mr. Dobbs : I should like to be quite clear on that. You do not impose a penalty on the other charges; therefore they must be dismissed.

The Lord Mayor : I will make it quite clear, then. I will impose a penalty of 1*s.* in each of the other charges.

Medicine-stamp Acts.

Two Offences.

At Northampton Borough Petty Sessions on August 5, Evan Charles Ashford, chemist, Gold Street, Northampton, was summoned for uttering, vending, and exposing for sale on June 1 a bottle of "Ashford's Celebrated Essence of Linseed" without an Inland Revenue Stamp affixed. Defendant was further summoned for a similar offence on June 2.

Mr. A. J. Darnell, who appeared for the defendant, admitted the offence, but maintained that it was a pure inadvertence, and no attempt at defrauding the Revenue.

Mr. Shaw, from the Solicitor's Department, Somerset House, who prosecuted on behalf of the Commissioners of Inland Revenue, said the medicine which formed the subject of the charge was described as "Ashford's Celebrated Essence of Linseed for the cure of coughs, colds, asthma, and all diseases of the chest and lungs," and therefore it was in a double sense liable to duty. In June last Mr. Jenkins, a tradesman of Northampton, purchased a bottle of this medicine, for which 1*s.* 1½*d.* was paid, but he found that it was unstamped, and accordingly he reported the matter to the Inland Revenue authorities at Northampton. On the following day Mr. Jenkins bought another bottle, for which the same price was paid, and this also was unstamped. Mr. Jenkins was in a position to say that during the last two years he had on various occasions purchased this medicine and had more than once found it unstamped.

As the defendant admitted the charge, no evidence was called; and after Mr. Darnell had addressed the Bench, defendant was fined 5*l.* on each of the two summonses.

Sale of Food and Drugs Acts.

Birmingham Prescriptions.

Two interesting prosecutions by the Birmingham Health Authorities were heard at the City Police Court on August 5, the Magistrates being Messrs. J. F. Brane and George Tangye. The defendant in the first case was Walter Edwin Heath, chemist and druggist, of 382 Lodge Road. On June 27 he was asked by a messenger from the Health Department to compound the following prescription :

Quin. sulph. ... ... ʒiv.
Ac. sulph. dil. ... ... ʒiv.
Aq. ad ... ... ℥vj.
M.

Sig. : A dessertspoonful every four hours as required.

The mixture should have contained 240 grains of quinine sulphate and 240 minims of diluted sulphuric acid in the 6-oz. bottle, but the result of the analysis showed only 23 grains of quinine sulphate and 141 minims diluted sulphuric acid. The messenger, a woman, left the prescription and called later in the day for the mixture. Defendant then asked her if the patient was very ill, because, he said, it is rather an extraordinary dose. He charged 2*s.* The woman handed the bottle to Inspector Jones, who came into the shop and declared his identity. To him the defendant said, "I did not put the ½ oz. of quinine in—I only put in ½ dr.; I thought it was a mistake."

Mr. Reay Nadin, who conducted the prosecution on behalf of the authorities, contended that when a chemist got a prescription to make up which was evidently that of a medical man, it was no part of his duty to use his own discretion as to the amount of any particular drug he should put in. Section 7 of the Act under which the prosecution was brought provided that if a compound drug was asked for in a certain form it was the duty of the chemist to supply it in that form. The price of 23 grains of quinine was only one penny, whereas the price of 240 grains was about ninepence.

Dr. McCrindle, assistant medical officer for health, who wrote the prescription, said 240 grains was the full amount of the dose, but in certain cases it was an amount reasonably ordered by a medical man. In an ordinary case of fever it was an extreme dose. He would expect compliance with such a prescription from a chemist.

Mr. J. F. Liverseege, city analyst, said the expensive ingredient in the preparation was quinine; the others were trifling.

The defendant elected to be sworn. He said he should not think of putting ½-oz. of quinine into a 6-oz. mixture. The ordinary dose they were accustomed to make up was from one to two grains. When the woman called with the prescription he inquired the complaint of the patient and the address of the doctor, and he would not make up the prescription until the woman came back and he had made these inquiries.

In answer to the Clerk, defendant said if he had put in the 10-grain dose of quinine he would have charged about 5*s.* for the preparation.

Mr. Brane : Did you think this was a medical prescription?

Defendant : No; I thought it was a copy. It was so well-written that I did not think a doctor had written it. (See page 299.) It might as easily have been 2,400 grains as 240 grains. We must use our discretion.

Mr. Nadin suggested that the defendant ought to have refused to make up the prescription altogether rather than adopt the course he did. (To defendant) : Don't you think you might have complied with this prescription and also satisfied your own conscience if you had warned the purchaser to be careful when measuring the dose?

Defendant : I did not look at it in that light.

Mr. Nadin : Do you suggest that most chemists would adopt the course you did?

Defendant : I don't know. I did not know what to do with it. I thought there was a flagrant error somewhere, and that the best way was to safeguard the patient. It did not look like a doctor's prescription.

The Clerk : You were dissatisfied with the prescription from the patient's point of view, but you prescribed yourself for the patient.

Mr. Nadin : In safeguarding yourself and the patient you saved eightpence.

Defendant : I did not take that into consideration.

Mr. Nadin said the same prescription was sent to five other chemists, who complied with it.

After a long consultation, Mr. Brane said the Magistrates regarded the case as one of the most important ever brought before them. Up to a certain point the defendant exercised a very proper discretion. But he did not go far enough. When he convinced himself that there was something in the prescription which suggested to his mind possible danger to the patient, he should have insisted that the name of the doctor be given him, and he might have absolved himself from all personal responsibility by consulting the doctor. The Magistrates did not think there was any dishonest intention on the part of the defendant. But he had been negligent in his duty, and they had no alternative but to convict, though they had tried every possible way to find if there were any means to justify the action of the defendant. The penalty would be 40*s*. and costs.

Needhams (Limited) were also summoned for selling a mixture not composed of the ingredients demanded by the purchaser. The messenger from the health authorities called at the company's shop at 40 Bristol Street, with the following prescription :

Pot. iodid. ... ... ʒvj.
Aq. chlorof. ad ... ... ℥vj.
M.

Sig. : One teaspoonful with a little water three times a day.

The capacity of the bottle supplied by the defendants was only 5¼ oz., and it contained only 334 grains of iodide. The dose given on the bottle was one tablespoonful instead of one teaspoonful as ordered by the prescription. One tablespoonful contained 32 grains, while the dose ordered by the prescription was 7½ grains.

Mr. Nadin said in that case the defendants were charged with supplying too much, but what they complained of more than anything else was the mistake in the size of the dose. A tablespoonful would have been an injurious dose. He did not suggest any fraudulent motive either in this case or the last, but there was gross negligence.

Dr. McCrindle in his evidence stated that on weakly persons a tablespoonful of the mixture would have a serious effect. He was cross-examined by Mr. Willison, who represented the defendants, to show that when a private medical practitioner ordered a preparation which filled a 6-oz. bottle the usual dose was one tablespoonful, but he would not accept counsel's suggestion. The usual bottles prescribed by medical men, he said, were 6-oz., 8-oz., and 12-oz., and the smallest bottle carried the smallest dose.

Mr. Liverseege deposed that calculating a 6-oz. mixture instead of 5¼-oz. the quantity of potassium iodide was short of that ordered in the prescription.

Mr. Willison, for the defendants, said Messrs. Needham exercised the greatest care in their selection of assistants. The one responsible for the present prescription served his apprenticeship with them, and there had never been the slightest complaint against him. There was no intention to deceive the purchaser, because the assistant actually charged 4*d*. or 5*d*. less for the preparation than he should have done. Messrs. Needham employed Dr. Bostock Hill to go round from time to time and have prescriptions made up at their shops to see that their assistants were dispensing properly. He understood so far as Birmingham was concerned that when a mixture was made up in a 6-oz. bottle the dose was usually a tablespoonful. The bottle was taken from the bulk supplied direct to Messrs. Needham.

Evidence was given as to Messrs. Needham's practice in the matter of having samples taken and tested by Dr. Bostock Hill.

Mr. Nadin said it was carelessness they complained of, and they had had occasion to caution the firm before. In a previous case they gave a drug two or three times the value of the one asked for.

Mr. Willison replied that case did not refer to the present shop, besides, there was an explanation of that which the Health Committee accepted.

Mr. Brane said the Magistrates were satisfied there was no intention to defraud, but there was carelessness, and for that they would have to pay the costs of the prosecution.

Sweet Spirit of Nitre.

William Henry Marks, of 828 Ecclesall Road, Sheffield, has been fined 5*s*. and costs for selling sweet spirit of nitre containing only two-thirds of the minimum proportion of the essential constituents.

At Abergele Police Court on August 6, Richard Williams, grocer, of Pensarn, was ordered to pay 15*s*. 6*d*. costs for selling sweet spirit of nitre which contained only three-fifths of the maximum amount of ethyl nitrite required by the British Pharmacopœia. Mr. Crabbe, who defended, contended that defendant, who had only kept the nitre for the convenience of the people in the district, could not help it deteriorating.

French News.

(From our Paris Correspondent.)

The Sale of Secret Remedies, prohibited by proclamation in 1877 and forbidden by the present French laws, has just been the cause of the prosecution by the police of two Parisian pharmacists on whose premises were found (1) some "miraculous grease of a marmot" and (2) some "divine beauty-water for wrinkles." On the pleading of Maître Simon-Juquin, the Tenth Correctional Chamber condemned the pharmacists to a fine of 500f. each.

Imitating Guyot's Tar.—MM. Champigny & Cie., of Paris, proprietors of various pharmaceutical specialities and, amongst others, of Goudron Guyot, have secured a judgment at Dunkerque against a pharmacist of that town who was selling a similar preparation under that name. The defendant was ordered to pay a fine of 25f. and an additional 50f. for the purpose of advertising the judgment in a local newspaper. There was little doubt, as the evidence showed, that the pharmacist was in the wrong, as he had been cautioned once by the plaintiffs on the subject before legal proceedings were taken.

The Pharmacien should Stick to his Counter.—The law existing in France which requires that the owner of a pharmacy, who must be a qualified pharmacist, must also be in constant attendance at the shop is by no means strictly adhered to, but it has rarely happened that a prosecution has taken place for its non-observance. The Syndicate of Pharmacists of the North of France have, however, recently prosecuted a *confrère* at Roubaix for contravening the law, and the defendant has been condemned to pay a fine of 500f. (20*l*.). His unqualified assistant, who acted as manager of the pharmacy, was also mulcted in a similar amount. They were likewise ordered to pay a nominal fine of 1f. to the Syndicate. The evidence showed that the principal defendant passed most of his time at Lille, a town eight miles away, where he was studying as a medical student. While admitting that the pharmacist was deserving of consideration in the circumstances, the Judge said that the dispensing of medicines, which sometimes contain poisonous substances, renders a special knowledge necessary for their preparation, and the diploma is the guarantee of such knowledge. The exigencies of the law on the subject having for its object the protection of the public must consequently be observed. I am afraid that a good many pharmacists here, including some who are members of the French Parliament, come within the reach of this obsolete law, which will certainly be modified in the new text that is still before the Chamber of Deputies. As far as one can learn, the last prosecution of a pharmacist for absenting himself from his pharmacy took place as far back as 1829. On that occasion the defendant made a journey to Switzerland, and almost as soon as his back was turned the police stepped in and ordered the assistant to close the shop. The latter refused, but the proprietor was fined. It need hardly be said that the prosecution of Roubaix pharmacists by the local Syndicate is by no means a popular proceeding here.

Educational Information.

The first Educational Number of The Chemist and Druggist is dated September 15, 1871. It was modest and unpretentious. Fully two pages were devoted to medical education, and a little less than half a page to " Pharmaceutical Students and others "—veterinary being meant. The professional education in medicine at that time was limited to four years subsequent to the Preliminary examination, the subjects of which were practically the same as now. The Dentists Act was not passed until 1878, and scientific education was in 1871 still poorly organised. The educational establishments mentioned in the Number were: the School of Pharmacy, Bloomsbury Square (Professors Redwood, Bentley, and Attfield), the North London School of Pharmacy (Mr. J. C. Braithwaite), and the South London School of Chemistry and Pharmacy (Dr. John Muter, M.A.). " The well-known College of Chemistry in Liverpool founded by Dr. Sheridan Muspratt " was also mentioned, as the principal, Mr. Martin Murphy, F.C.S., gave a complete course of instruction to pharmaceutical students. In London Mr. Henry Matthews, F.C.S., and Mr. S. W. Rich also received students of pharmacy. We mention these facts as a contrast to the present condition of education outlined in the following pages.

The Practice of Pharmacy.

THE sale of poisons and the compounding and dispensing of medical prescriptions in Great Britain and in Ireland are the subject of two distinct sets of laws. Both are similar in principle in requiring that persons engaged in business—*i.e.*, keeping open shop as pharmaceutical chemists, chemists and druggists, or druggists—must hold certain qualifications as laid down in the laws. Dealing first with

Great Britain,

it may be noted that until 1868 there was no restriction upon the sale of poisons generally or in regard to the use of the title "chemist and druggist." In that year the Sale of Poisons Act, being an Act to amend the Pharmacy Act, 1852, was passed, and it required that after December 31, 1868, no one should assume, take, or use the title "chemist and druggist," or "dispensing chemist," or any similar title, or keep open shop for the sale of poisons, or sell poisons (as named in the schedule to the Act) unless he had been in the business before the Act was passed or subsequently had satisfied the examiners of the Pharmaceutical Society of his ability, and, in both cases, secured registration under the Act.

From the foundation of the Pharmaceutical Society of Great Britain examinations had been conducted by that Society, and its charter and the Pharmacy Act, 1852, gave these a statutory position. The examinations were (1) the *Preliminary* (English, Latin, and arithmetic), (2) the *Minor*, for registration as assistants (the subjects being pharmacy, dispensing, prescription-reading, chemistry, materia medica, and botany), and (3) the *Major*, for registration as a member of the Society or pharmaceutical chemist (subjects same as the Minor). The Pharmacy Act, 1868, required that those not previously in business who desired to be registered as "chemists and druggists" should pass an examination similar to that required under the 1852 Act for assistants—viz., the Minor examination—but persons who were assistants at the time were allowed to pass a modified examination. The Pharmaceutical Society has elastic powers in determining the extent to which candidates shall be examined in the specified subjects, and the result has been an increase in the stringency of the examinations from time to time. The Preliminary examination was confined to the same subjects as in 1868 until a few years ago, when algebra, Euclid, and a modern language were added to the requirements. Increased stringency in the other examinations was contemplated from the first. Thus the Privy Council's Visitor to the English Board, reporting on the 1870 examinations, completed his remarks with the following statement:

> I observe some minor improvements in method, and I am led to believe that it is the intention of the Board of Examiners gradually to raise the standards of competence, both for the Minor and Major examinations. With reference to the Major examination I would venture to suggest that, as the candidates for this examination are already qualified to carry on business as chemists and druggists, there would be no hardship in fixing the standard for passing it somewhat higher; thus making a greater difference than now exists between the grade of chemist and druggist and that of pharmaceutical chemist, and ensuring in those who bear the latter title a higher degree of pharmaceutical skill. I am of opinion, further, that, inasmuch as the increase of practical pharmaceutical skill is what will most conduce to the service of the public, the standard of the Major examination should be heightened principally in its practical aspects. I would recommend that candidates for this examination should be required to estimate practically, by means of volumetric test solutions appended to the British Pharmacopœia, the strength of such officinal preparations as are directed to be so estimated, and also to show considerable proficiency in reading difficult or unusual prescriptions written in the Latin language.

The special interest of this quotation lies in the fact that Minor candidates have for a decade been required to possess the "practical pharmaceutical skill" which in 1871 it was proposed to ask of Major candidates. We may now proceed to state

How to Become a Chemist and Druggist.

1. Pass a Preliminary examination in English grammar and composition, Latin, a modern foreign language, arithmetic, algebra, and Euclid, recognised by the Pharmaceutical Society.

2. Register as a student of pharmacy, and be so registered for at least three years, or otherwise for three years be practically engaged in the translation and dispensing of prescriptions.

3. On attaining the age of twenty-one years pass the Minor examination in botany, chemistry and physics, materia medica, pharmacy, practical pharmacy and dispensing, and prescription-reading.

All communications in regard to pharmaceutical examinations and registration in Great Britain should be addressed to Mr. Richard Bremridge, Registrar, 17 Bloomsbury Square, London, W.C.

THE PRELIMINARY EXAMINATION.

The Pharmaceutical Society does not conduct this examination. It has empowered the Boards of Examiners to receive from persons desirous of obtaining registration as apprentices or students one or other of the following certificates on condition that the six subjects have been passed in not more than two examinations, except in the case of certain certificates which are accepted by the Scotch Universities for registration as medical students.

Aberdeen University.—Junior or Senior Local examinations. Preliminary examination for Graduation in Medicine or Surgery. Preliminary examination for Graduation in Arts or Science.

Birmingham University.—See note at foot.

Cambridge University.—Junior or Senior Local examinations. Higher Local examinations. Previous examination.

Central Welsh Board.—Honours, Senior and Junior certificates.

College of Preceptors.—Examination for a First or Second Class certificate.

Dublin University.—Public Entrance examinations.

Durham University.—Junior or Senior Local examinations. Preliminary examination in Arts.

Edinburgh University.—Junior or Senior Local examinations. Preliminary examination for Graduation in Medicine and Surgery. Preliminary examination for Graduation in Arts or Science.

Educational Institute of Scotland.—Preliminary Medical examination.

Glasgow University.—Preliminary examination for Graduation in Medicine or Surgery. Preliminary examination for Graduation in Arts or Science.

Intermediate Education Board for Ireland.—Senior, Middle, and Junior certificates.

Liverpool University.—See note at foot.

London University.—Matriculation examination.

Oxford University.—Junior or Senior Local examinations. Responsions

Oxford and Cambridge Schools' Examination Board.—Examination for Higher or Lower certificates.

Royal University of Ireland.—Matriculation examination.

Scotch Education Department.—The honours, and First Grade and Lower Grade Leaving certificates.

St. Andrews University.—Preliminary examination for Graduation in Medicine or Surgery, or Arts or Science.

University of Wales.—Matriculation examination.

Victoria University.—Entrance examination in Arts of the Faculty of Medicine. Preliminary examination.

Certificates of having passed an examination of a legally constituted examining body not specified in the above list may be submitted for the consideration of the Boards of Examiners and the approval of the Council, and each individual case will be considered on its merits. It is understood that the Matriculation examinations of the Birmingham and Liverpool Universities are recognised, but they do not yet appear in the official list. Particular attention should be given to the fact that the certificates must cover all the subjects (one of the London Matrics. does not include Latin). It has been decided that Welsh is not a modern foreign language.

To obtain registration as a student of pharmacy the certificates have to be sent in to the Secretary with a fee of two guineas. The regulations for the Minor examination require that the applicant shall have been registered as an apprentice *before his application for the Minar is submitted.* It follows, therefore, that an applicant for the Minor must have had his certificates submitted to the Board of Examiners at least three months before he intends to apply for the Minor, seeing that the Boards meet every three months only.

What Examination to Pass.

The "Guide to Preliminary Examinations for Pharmacy, Medicine, Dentistry, Veterinary Surgery, and Science," published at the "C. & D." Office, 42 Cannon Street, London, E.C., 2s. 6d., by post 2s. 9d., gives the fullest particulars of these Preliminary examinations.

If the student has not taken one of the certificates mentioned in the official list during the ordinary course of school training, he should prepare for one of several examinations which are specially suitable for pharmaceutical students. These are described in the following notes :

The College of Preceptors, Bloomsbury Square, London, W.C., intimate that a pass in the specified subjects in their Second-class or Junior examination meets the Society's requirements. The subjects are :

English.—Candidates may take either a paper on general English grammar and analysis of sentences, or a paper on one of the following books: Shakespeare's "Richard II.," Scott's "Marmion"; in each case with analysis of sentences, and questions based on the text. All candidates are required to write a short essay, and to paraphrase a passage of poetry.

Arithmetic.—Including the metric system; but excluding cube root, rate and time in interest, compound interest, and stocks.

Algebra.—Including simple equations, fractions, and easy quadratic equations. Alternative questions are set on graphs.

Geometry.—Euclid, Book I., together with either Book II., or Props. 1-19 of Book III., with riders. An alternative paper is set on Theoretical and Practical Geometry.

French, German, Italian, Spanish.—Translation from and into the foreign language, and grammar.

Latin.—"Unseen" translation, or one of the following books: Cæsar, "Gallic War," Book III.; Cæsar, "Gallic War," Book IV. (20-end) and V. (1-23); Virgil, "Æneid," Book I. Grammar, and English into Latin.

The subjects of the examination vary from time to time. The College intimate that there is no limit to the number of times a candidate may enter for the examination, but he may only count for registration any two (not more) examinations. Examinations are held in March, at Midsummer, in September, and at Christmas each year, at private or public centres in London and the provinces. Candidates must obtain entry-forms from the Secretary of the College, fill these up and return at least twenty-one days before the date of examination with the fee of 10*s.* 6*d.* (and local fee of 2*s.* 6*d.*), or 25*s.* for the March and September examinations.

The Educational Institute of Scotland, 40 Princes Street, Edinburgh, hold a similar examination three times yearly. It serves for registration as a medical, dental, or pharmaceutical student. The compulsory subjects are :

English.—Dictation, composition, parsing, and derivation; outlines of British history; geography of the world, especially of the British Isles and Colonies.

Latin.—Grammar; translation into English from authors not prescribed; prose composition.

Mathematics.—Arithmetic: Common rules and vulgar and decimal fractions. Algebra: Up to and including simple equations. Geometry: Euclid, Books I.-III., with deductions.

A Modern Language.—Grammar; translation (English into the modern language, and the modern language into English).

The fee for pharmaceutical candidates (who may take the examination at two sittings) is 1*l.* payable previous to the first examination, and 10*s.* payable previous to any subsequent examination. The form of entry should be obtained from Mr. S. M. Murray, 40 Princes Street, Edinburgh, some time before the date on which the examination is held and returned with the fees at least five days before the examination begins—viz., in the first weeks of April, July, and September.

The Cambridge Junior Local Examination is typical of the local examinations held by universities throughout the country. The examination is one for which schools in England prepare their pupils. It takes place in December each year at various centres. Forms of entry are ready in September and must be obtained from the Local Secretary of the place at which the student desires to be examined. The fee is 10*s.* 6*d.* for each junior candidate, besides the local fee. The duly filled-up form, with the fee of 10*s.* 6*d.* and the local fee, must be sent to the Local Secretary on or before October 3. The subjects are :

Compulsory.—Writing from dictation. Arithmetic, including vulgar and decimal fractions and the metric system.

Optional.—Comprises fourteen sections from which the student of pharmacy would select the additional subjects required by the Pharmaceutical Society—namely, English Grammar and composition (the latter including Scott's "Marmion" or Lamb's "Tales from Shakespeare"); elementary Latin, including translation from the "Stories of the Kings of Rome"; elementary French or German, with easy unprepared passages for translation into English and questions on accidence; elementary geometry (practical and theoretical); elementary algebra.

The regulations for the 1905 examinations can be obtained after September 1, 1904, from the General Secretary, Syndicate Buildings, Cambridge.

The Oxford Local Examination regulations are obtainable from the Secretary, Local Examination Offices, Merton Street, Oxford.

Central Welsh Board.—Written examinations will be held in 1905 commencing not earlier than July 10. The Junior examination is the most suitable one for chemists' apprentices in Wales. Applications for entry-forms must reach the Clerk of the Board, Cardiff, not later than May 2, 1905, and must be forwarded to him, duly filled up and accompanied by a fee of 5*s.*, not later than May 12. The examination is in three sections, viz. :

(A) Comprising Scripture knowledge, English language, English literature, and English history.

(B) Arithmetic and mathematics.

(C) Latin, Greek, Welsh, French, Spanish, German, and Italian.

The Board state that English composition, arithmetic, algebra and geometry, Latin, and one modern language are all that is necessary for those who wish to be registered by the Pharmaceutical Society, and they arrange accordingly for such students.

The Scotch Education Department certificates are granted to pupils of schools in Scotland. All that need be said in regard to them here is that boys or girls who intend to go in for pharmacy should endeavour, before leaving school, to get certificates which will be recognised by the Pharmaceutical Society.

The London University Matriculation examination is regarded as the high-water mark of elementary scholastic education. Particulars of it are given elsewhere. Entrance and Matriculation examinations of other universities in the United Kingdom are also recognised by the Pharmaceutical Society provided they contain the requisite subjects.

Students in Scotland who wish to avail themselves of the Carnegie Trust should pass a Preliminary examination for graduation in science at a Scotch University and use this for registration as students of pharmacy. Subsequently they will find it useful if they proceed to the degree of B.Sc.(Pharm.) The same remark applies to the Victoria University, which has a similar degree, so that persons desiring to obtain it should pass the examination necessary for matriculation at that University.

THE QUALIFYING OR MINOR EXAMINATION.

We have already indicated generally the requirements of those who desire to enter for this examination, and before giving more specific information it will be well to point out to the student what he should do after entering the business. First he should register as a student of pharmacy, or, at least, pass the necessary Preliminary. Obviously one can learn a business best when he has got rid of school studies. We strongly advise this being done before beginning apprenticeship. Instead of working at the examination when shop-duties have to be done, it pays better to have three or six months' special coaching and get over the examination. Generally speaking, the lad who cannot pass it after a fair education and special coaching is better out of pharmacy. From the first day he enters the shop an apprentice must set about learning the business, and it is just as well that he should simultaneously begin reading the subjects relating to it. The syllabus of the Minor examination is a fair guide in that matter, but it is well to remember that the examination is a mere incident in the chemist's career. Success in the calling depends, not on passing that examintaion, but in learning the business thoroughly. Pharmacy is not all chemistry by any means, and this is where a proportion of young fellows quickly meet with disappointment. They find when they enter the shop that there is a good deal of cleaning and washing to do, much manual labour, some shopkeeping, some counter-work, such as any draper or grocer does, and few, if any, chemical experiments. Some are not long at the business before they think the whole thing a deadly failure, and this is just the point where there is need for encouragement by apprentice-masters and parents alike. The most enlightened technical chemists say that the best training for industrial chemistry is obtained in a chemist's shop.

Chemists' apprentices should be observant in everything that they do, and in spare time read about the things they handle. Books such as the British Pharmacopœia are usually in the shop, but the apprentice should get a few elementary works for his private use. The following suffice to begin with :

Ince's "Elementary Dispensing Practice," 3*s.* 6*d.*, by post 3*s.* 9*d.*, from the *C. & D.* Office.
Gadd's "Drugs," 5*s.*, published by Baillière, Tindall & Cox.
Henry's "Aids to Chemistry," 4*s.* 6*d.*, published by Baillière Tindall & Cox.
"Primer of Botany," published by Macmillan at 6*d.*

As apprenticeship advances other books can be obtained. We print elsewhere a list of those in common use at the various pharmacy schools in the country. Some apprentices and assistants build up their libraries by competing in the Students' Corner of this journal, which awards two book prizes every month, and three others at the end of the Winter Session. The competition is in chemical analysis, which, with theoretical chemistry, is the most important subject. Evening classes in chemistry and other scientific subjects are held in every town in the country, and they should be taken advantage of by apprentices and assistants.

Subjects of the Minor Examinantion.

A copy of the official schedule can be obtained from Mr. R. Bremridge, 17 Bloomsbury Square, London, W.C.

The following synopsis of the official schedule suffices to show the scope of the examination :

Botany.—Classification, including sub-classes and natural orders of angiosperms and recognition (fresh or dried) of forty-five specified medicinal plants. Morphology and anatomy of all parts of the plant, including recognition, by the microscope, of plant-structures. Elementary facts about the physiology of plants, including reproduction.

Chemistry and Physics.—An elementary knowledge of physical laws (*e.g.*, conservation of energy, atmospheric pressure, and temperature); the characteristics of chemical action and the principles of chemistry; non-metals and their compounds, with knowledge of the usual impurities in those included in the British Pharmacopœia; metals, their oxides and salts, including their preparation, properties, and adulterations; carbon compounds, especially those used in medicine, and how to prepare and test them. The practical examination includes the application of physical laws, as by determining specific gravities, recognition of chemicals by tests, qualitative analysis (two metals and two acid radicals), identification of alkaloids, &c., volumetric analysis of the B.P., assaying alkaloidal preparations, and a practical acquaintance with the methods of preparing the more important B.P. inorganic substances and certain specified organic compounds (*e.g.*, chloroform).

Materia Medica.—Recognition of B.P. and other specified drugs, telling their principal commercial varieties, sources, natural orders, and modes of collection and preparation for the market, some knowledge of their morphology and active constituents, and how the latter may be determined.

Pharmacy.—The examination in this subject deals with all the operations involved in preparing drugs for administration—*e.g.*, evaporation (extracts), distillation, sublimation, and desiccation, solution (infusions, tinctures, &c.), filtration, and expression; the principles involved in the dispensing of medicines, particularly as to pill-masses and emulsions. The candidate is also required to show a general knowledge of the processes by which the official galenical preparations are made, and to have a knowledge of the proportion of active ingredient or crude material in official preparations of aconite and other potent medicines. He must know what are the scheduled poisons in Part I. and Part II., and the legal conditions necessary to be observed in dispensing, retailing, exporting, and wholesaling them; also the special conditions imposed on the sale of arsenic by the Arsenic Act.

Practical Pharmacy and Dispensing.—The candidate is required to make certain B.P. preparations, and to do everything required in compounding and dispensing physicians' prescriptions.

Prescriptions.—The candidate is required to read and translate into English autograph prescriptions and know the grammatical construction of the Latin; to detect errors, discover unusual doses, and have a general knowledge of posology. Also to translate English prescriptions into Latin.

Where Held.

The examination is conducted at 36 York Place, Edinburgh, and at Galen Place, London, W.C., by Boards of Examiners composed of teachers of botany and chemistry, and pharmaceutical chemists, appointed by the Pharmaceutical Society and approved by the Privy Council. It is held in January, April, July, and October, and applications for admission, with the fee of ten guineas, must be in the hands of the Secretary (Mr. Bremridge, as above) on or before the fifteenth day of December, March, June, or September.

How to Apply.

Each candidate must have been registered as a student and have attained twenty-one years of age before he applies. He must produce to the Registrar a certificate showing that he has been engaged for three years in compounding medical prescriptions (a form can be procured from Mr. Bremridge) and a registrar's certificate of birth. Forms of application should be obtained from the Registrar well in advance. If the candidate fail in the examination, he is admitted to any subsequent one by payment of three guineas.

It is customary to have a course of study at a college before entering for the examination, but this is not compulsory—in fact, it is possible to

Prepare for the Examination

without leaving business. It is not often done nowadays, but an assistant who passed the examination in July sends us the subjoined account of how he did it :

I passed the Preliminary whilst at school, and six years ago I was bound apprentice for four years to one of the old-fashioned market-town chemists. When any of the Minor subjects were taught at the little School of Science in my town I was a very regular attendant, and obtained first-class certificates in elementary theoretical chemistry and botany under the auspices of the South Kensington Educational Committee.

I did not make any special effort for the Minor until nine months ago, when I commenced to study in earnest. I had purchased the books I thought I should require, also a materia-medica cabinet containing about 250 specimens, as I saw them advertised in the *C. & D.* Supplement. The Science School laboratory had been closed through lack of students, so I advertised for a room and obtained what I desired in the shape of a disused tailor's ship at a moderate rental. My next step was to purchase a set of reagents and apparatus from Barclay's (London). Of course I had to work under several disadvantages. There was neither water nor gas in the shop, and I had to manage with a bucket, and a spirit-lamp instead of a Bunsen. My fume-cupboard was a biscuit-tin and a piece of gas-piping connecting it with the pure air outside. Having fitted up my "lab.," I arranged with my master for a supply of six simple and complex salts a week, and took lessons in analysis from a private tutor.

I divided up the week and arranged my work systematically. I never devoted long hours to one subject, but read carefully, and during my walks I would recapitulate in my mind what I had been reading. I devoted about two hours a day to the theoretical subjects, and analysed my salts and did the volumetric work during spare half-hours and on the weekly half-holiday. I looked at my materia-medica specimens once a week, and impressed them on my memory according to the following plan. I picked out a numbered specimen, consulted the key, and learnt off by heart (1) name of drug, (2) natural order, (3) habitat and chemistry. The oftener I examined them the less often was it necessary to consult the key, and gradually I was able to run through the cabinet in ninety minutes. My shop-dispensing experience I considered would be ample, and found it to be so. For a small fee, Mr. Wills, of the Westminster College, sent me a box of slides, and periodically a box of about sixty fresh flowers for description. The microscope I borrowed. The only cessation from business I obtained was the two days of the Minor. My library consisted of the following books: The British Pharmacopœia, the "Art of Dispensing," Ince's "Latin Grammar," Wills's "Autograph Prescriptions," Everitt's "Physics," Newth's "Inorganic Chemistry," Perken and Kipping's "Organic Chemistry," Southall's "Materia Medica," Wills's "Volumetric Analysis," Clayton's "Analysis," Green's "Botany," Vols. 1 and 2, Lowson's "Botany," "Essentials of Pharmacy" (London College). I have not kept an accurate record of the cost, but give it approximately:

	£	s.	d.
Minor fee...	10	10	0
Rail-fares and hotel, London... ...	2	10	0
Fees to school-tutor	4	0	0
Set of reagents	1	0	0
Materia medica and dried mounted plants	1	10	0
Apparatus	1	0	0
Books	2	10	0
	23	0	0

I have sold the remainder of my reagents and apparatus, my materia medica, and some of my books, and am not now more than 20*l.* out of pocket, if that. It is not my intention to describe the examination itself, but I hope to be excused for offering a little advice to other fellows who are preparing for the Minor, viz.: Learn your work thoroughly: this will help you to keep calm and collected. Be polite to the examiners: if you give them the impression that you are a gentleman, they will treat you as such. (206/5.)

What the Examination is Like.

The first day of the examination is devoted entirely to practical work—viz., from 10 A.M. to 1 P.M. to chemistry, and from 2 to 5 P.M. to practical pharmacy and dispensing. Half the candidates take practical pharmacy and dispensing from ten to one. No matter how much of a mess a candidate may make of his forenoon's work, he is allowed to go on in the afternoon. In a week or so all candidates are told the result of their practical work, and if they have done well they are asked to come up for an oral examination in all the subjects, which lasts a day. The following are the results for 1903, as reported by the Government Visitors :

Failed in	EDINBURGH. (Examd., 532; Passed, 172; Failed, 360)	LONDON. (Examd., 1,151; Passed, 371; Failed, 780)
Practical chemistry	80	166
Practical pharmacy	25	181
Both above subjects	128	—
Botany	12	30
Chemistry (oral)	45	36
Materia medica	12	26
Pharmacy (oral)	28	22
Prescription-reading	3	54
The aggregate	43	132

The percentages of failures in both places is the same, but there is a marked difference in the percentages of failures in individual subjects. For example, 21.3 per cent. failed in practical chemistry in London and 15 per cent. in Edinburgh, while the failures in practical pharmacy in London were 23.3 per cent. and in Edinburgh only 4.9 per cent., but the competency in oral pharmacy was almost the reverse. The examinations are practically the same before both Boards, and the following account by a candidate will show what the examination is like :

I found myself in a large well-appointed hall, set out with occasional tables on which were placed writing-materials and envelope required to be inscribed with name and address of the embryo chemist. This ordeal over, one heard a voice mechanically announcing a string of names, by which I became aware that my lot had been decided for practical chemistry. After climbing the long flight of stairs, I searched out "Bench 16," the space allotted me. There I found a neatly and carefully arranged bench with all the apparatus one might wish for.

My paper requested that I should examine a given oxide and identify the metal, and then prepare a pure crystalline sample of the sulphate. My early suspicions of copper were very soon confirmed, but by further pursuing the chart I discovered definite traces of iron impurity, which necessitated a long journey through Group II. in order to eradicate it from the crystalline sulphate product. My volumetric consisted in the estimation of an impure sample of sodium chloride with decinormal silver nitrate. My labours were brought to an earlier conclusion that I should have wished, as at call of time I recognised a deplorable absence of crystals in my carefully, almost affectionately, prepared solution of copper sulphate; but I had to leave them with inward supplications that they would "come down" sooner or later as in my report I had professed they would.

After a brief lunch I returned to the dispensing-room, which after a brief survey I distinctly admired: all vessels and material seemed in conspicuously good order, and the only thing remaining to make one feel quite at home was a pestle and mortar, which after the distribution of papers was soon much in evidence. The prescription given me requested one dozen pills of hyd. c. cret. et ext. belladonnæ —the latter ingredient advised by the examiner to be the "green extract"—an emulsion of castor oil, a percentage solution of silver nitrate, a lotion involving the preparation of mist. amygdalæ co., and, finally, ung. hydrarg. oleat. Meeting with no mishap, I finished well within time.

In the usual course I received notice to attend the oral examination. My first subject was pharmacy, in which I was very soon at my ease owing to the gentlemanly manner in which I was received by the examiner. After being invited to recognise tincture of hops, terebene, and ext. cocæ liq., I was asked methods of preparation; to describe B.P. method of standardising ext. cinchonæ liq., with reasons for various steps; why it is necessary to obtain data by operating on a small portion of ext. bellad. liq. in preparing the alcoholic extract, instead of calculating from its known strength: these and a few abstract questions relative to evaporation, distillation, and percolation, and enumerating the strengths of several extracts, enabled me to retire.

The materia-medica interrogator asked me to recognise about a dozen leaves with well-marked characters, including belladonna, henbane, conium, lettuce, and eucalyptus; and after briefly describing their sources and matters relating to their collection and value and summarising the character of alkaloids, particularly those indicated by the specimens under inspection, I was told I might go to my place.

The interval before being sent to chemistry seemed almost interminable, and I was not very comforted, on appearing for this subject, to learn that my anxiously anticipated crystals had not "come down" in my first day's work. The examiner, after dilating on their importance, proceeded to give me several questions on copper compounds, which mostly connected themselves with the first day's work. I drew out of this by employing a term which was criticised as ridiculous and extinct, with some suggestion of doubt that it ever existed. Obviously some interest had been introduced, for after a short lecture on the vanity of employing pretentious and unnecessary terms, and a charitable review of the ethers and benzene, I was released.

Botany followed, and after descriptively recognising three slides under the microscope and answering a few morphological questions arising therefrom, practically demonstrating the presence of starch in a tuber, and referring a given specimen to its natural order, I was able to resume my seat on the carpet.

I was now conscious that I was nearing the end of my trial, and after a brief wait had prescription-reading, which proved a very straightforward matter indeed—in fact, several of the prescriptions I was required to read were well written. Translation of a prescription from English into full Latin, and another from abbreviated Latin into English, giving the maximum dose of about a score of the Pharmacopœia's most potent drugs, took me in the balance for the final weighing and—I did not tip the beam. I got my certificate next day. (170/40.)

For other accounts of the examination (in Edinburgh and London) see The Chemist and Druggist, May 28, 1904.

THE MAJOR EXAMINATION.

This entitles those who pass to call themselves "pharmacists," "pharmaceutists," or "pharmaceutical chemists." It is open only to those who have passed the Minor examination, and the entrance-fee is three guineas. The examination is held in London and Edinburgh in the same months as the Minor. Two days are devoted to written papers, and if the questions are satisfactorily answered candidates proceed to practical chemistry. The subjects are as follows:

Botany.—Candidates should have a thorough knowledge of classification, morphology, and physiology. They are required to make and mount microscopic preparations illustrating vegetable structure, and to apply micro-chemical tests for plant-tissues.

Chemistry and Physics.—Candidates may be taken more fully in the Minor subjects, and are expected to have a good knowledge of the constitution of matter, heat, light, magnetism, electricity, chemical theory, and the classification, characteristics, and constitution of the carbon compounds, particularly cyanogen derivatives, hydrocarbons, and paraffin and benzene derivatives. Special attention is paid to B.P. standardising processes. Practical work comprises the analysis of mixtures of three metallic salts; estimation of nitrogen in organic compounds; determination of melting and boiling points; gas-analysis by nitrometer; preparation of certain organic substances; recognition of pharmacopœial chemicals; and generally the application of all B.P. chemical tests and assay processes, and the separation of alkaloids and glucosides; also the detection of methyl alcohol in galenical preparations.

Materia Medica.—Candidates must know how to estimate the value of important drugs, and to distinguish commercial varieties, and separate official active principles. Also to have a general acquaintance with the actual constituents of all important drugs, discover adulterations, examine drugs microscopically, and so on.

The questions given in the July examinations will be found in The Chemist and Druggist Supplement of July 16. Only eight candidates were examined in Edinburgh during 1903; two of them failed in botany, and one each in materia medica, physics, and practical chemistry. In London seventy-three candidates were examined, of whom thirty-one failed, five in botany, the same in chemistry (practical and theoretical), one in physics, eleven in more than one subject, and nine in the aggregate.

Note.—*The whole of the subjects of the Minor or Major examination must be passed at one time.*

APOTHECARIES' ASSISTANTS' CERTIFICATE.

This is not granted by the Pharmaceutical Society, but by the Society of Apothecaries, Blackfriars, London, E.C., under their Charter and Act of 1815. It gives no rights under the Pharmacy Act, 1868, except what may be embodied in the provision that nothing in the first fifteen sections "shall extend to or interfere with the business of any legally qualified apothecary." It follows that the holders of it are not entitled to dispense or retail poisons unless they are employed by legally qualified apothecaries, or act under the direct supervision of a registered medical practitioner or chemist and druggist. It is also valid in England and Wales only. It is recognised by the Local Government Board as a qualification for Poor-law dispenserships, and most hospitals require that their dispensers should have it or the Minor qualification. The examination is held at the Apothecaries' Hall, Blackfriars, on the fourth Wednesday and following days of January, April, July, and October. It consists of two parts—practical and oral. The former, which commences at 10 A.M., comprises (1) compounding and dispensing of medicines, and the latter, commencing at 2 P.M., (2) chemistry, (3) materia medica and pharmacy, and (4) translation of prescriptions. When there is a large number of candidates the practical work begins on the Tuesday. A candidate is credited with any of the four subjects in which he may pass, and may present himself for the others subsequently. The fee for the examination is five guineas, and for re-examination two guineas (on each occasion). Candidates are required to give notice to Mr. Frank Haydon, L.R.C.P., Secretary of the Court of Examiners, Apothecaries' Hall, Blackfriars, E.C., on a form to be obtained from him, and to pay the fee, fourteen days previous to the examination. Candidates must be eighteen years of age, and must prove this by a certificate from parent, guardian, or nearest relative. Each candidate must also produce a certificate from a registered medical practitioner, an assistant of the Society holding a public appointment, or a legally qualified chemist that he has received six months' instruction in practical pharmacy.

This examination is a favourite with women dispensers, and Minor students in London frequently take it as an appetiser for the Minor. A copy of the regulations, giving the subjects complete, may be obtained from Mr. Haydon on application.

Ireland.

The twenty-seventh section of the Pharmacy Act of 1868 says "this Act shall not apply to Ireland." At that time the only Act regulating the practice of pharmacy in Ireland was one passed in 1791 by the Irish Parliament for erecting an Apothecaries' Hall in Ireland and providing licensed apothecaries. The privilege of dispensing physicians' prescriptions was reserved to such licentiates.

In 1870 the Sale of Poisons (Ireland) Act was passed, which embodied the provisions of the 1868 Act as regards the scheduling of poisons and their sale, but such sale was not restricted to any particular class of traders. In 1875 the Pharmacy Act (Ireland) was passed. This created a Pharmaceutical Society and gave it power to regulate the qualification of pharmaceutical chemists in Ireland. Up to this time there had been many chemists and druggists in the country, trading as such, and selling poisons. Those of them who desired to compound and dispense medical prescriptions had taken the apothecaries' licence. The 1878 Act did not disturb the apothecaries' privilege, but enabled persons registered under it to sell and compound poisons and medical prescriptions. As there had been two grades in the drug-trade before 1875, so there continued to be, and many connected with it had no desire to be dispensing chemists, their business being confined to selling. Accordingly they did not bother about registering under the 1875 Act, and as they grew in number it became necessary to provide for their registration. This was done by the Amendment Act of 1890, under which chemists and druggists who were in business before 1875, and had not registered as pharmaceutical chemists, were registered as chemists and druggists, and others in business on their own account at the time of the 1890 Act were entitled to be registered as druggists. For others then and in the future an examination was provided, the title granted being "registered druggist." Thus there are in Ireland two distinct sets of examinations, viz. : 1. Those leading to the qualification "pharmaceutical chemist," or licentiate of the Pharmaceutical Society. 2. An examination, defined in the 1890 Act, for the title "registered druggist."

In order to become a

PHARMACEUTICAL CHEMIST

it is necessary to pass a Preliminary examination; serve four years as apprentice or assistant in pharmacy; produce evidence of instruction in botany, practical chemistry, and materia medica; and pass the Licence examination after attaining the age of twenty-one.

The Preliminary Examination.

All communications and inquiries in regard to this and the other examinations should be addressed to Mr. Arthur T. Ferrall, Registrar, 67 Lower Mount Street, Dublin, who will supply copies of the official examination schedule on application.

The Society's examiners conduct this examination at Dublin on the first Thursday and following day of January, April, July, and October. Candidates must give fourteen days' clear notice to Mr. Ferrall, sending a birth-certificate (although no limit is put on the age of the candidate) and the receipt for the fee of 2*l*. 2*s*. lodged in the Bank of Ireland to the Society's account. Six subjects of the examination are compulsory, and one optional subject has to be taken. They are as follows :

Compulsory Subjects.

Latin.—To translate into English and parse sentences from Cæsar's "Commentaries" (*De Bello Gallico*), First Book, or Virgil's "Æneid," First Book. To translate an easy English sentence into Latin. [Minimum pass, 20 per cent.]

English.—Grammar, including orthography and parsing. To write on a subject selected by the examiner; and to write from dictation. [Minimum pass, 50 per cent.]

Arithmetic.—The first four rules, simple proportion, vulgar fractions, and decimals. To describe the British weights and measures and the metric system. [Minimum pass, 50 per cent.]

Algebra.—As far as simple equations, inclusive. [Minimum pass, 20 per cent.]

Geometry.—Including the first book of Euclid. [Minimum pass, 20 per cent.]

Elementary Theoretical Chemistry.—Comprising the theory of chemical action. Combustion, water, the air, and the chief physical and chemical characters and methods of preparing hydrogen, oxygen (and ozone), nitrogen, carbon, chlorine, sulphur, nitrous oxide, nitric oxide, nitric acid, ammonia, carbon dioxide, carbon monoxide, marsh gas, olefiant gas, hydrochloric acid, sulphur dioxide, sulphurous acid, sulphuric acid, sulphuretted hydrogen. [Minimum pass, 20 per cent.]

Optional Subjects.

The one selected by the candidate has to be stated at the time of application.

Elementary Physics and Mechanics.—Sound, light, and heat, as given in Ganot's "Elementary Course of Natural Philosophy"; mechanics of solids and fluids, comprising the elements of statics, dynamics, and hydrostatics.

The Rudiments of Botany, as given in Oliver's "Lessons in Elementary Botany," Part I.

French, German, or any modern language.

Spelling and handwriting are taken into account. An aggregate of 40 per cent. of marks is necessary to pass. Anyone failing to pass is admitted again in six months on payment of 10*s*. 6*d*. The Preliminary or Matriculation examination of the Royal College of Surgeons, or any other examination accepted by the General Medical Council for registration as a medical student, and the Preliminary examination of the Pharmaceutical Society of Great Britain, are accepted instead of the above. Such examination must be passed at least one year before the candidate presents himself for the Licence examination, and fee of 2*l*. 2*s*. has to be paid.

Alternative Examinations.

Qualification of Assistant to Pharmaceutical Chemist.

This is an intermediary examination which is open to persons who have passed the Preliminary examination and have been engaged in practical pharmacy for at least four years. The examination is held on the second Mondays in February, May, August, and November of each year, and candidates must give notice to the Registrar of the Pharmaceutical Society at least fourteen clear days before the examination, at the same time sending a receipt of having lodged the fee of 1*l*. 1*s*. with the Bank of Ireland to the credit of the Society. The subjects of examination are :

Prescriptions.—Reading and translating into English autograph prescriptions and detecting unusual doses.

Practical Dispensing of physicians' prescriptions.

Materia Medica.—Recognition of B.P. chemicals and roots, barks, leaves, fruits, resins, and gums, and to judge the quality and freedom from adulteration.

Pharmacy.—Recognition of B.P. preparations, such as extracts, tinctures, and powders, and the proportion of the more active ingredients. Candidates are also examined in the Sale of Poisons (Ireland) Act.

Pharmaceutical Licence Examination.

This examination comprises the following subjects :

Botany.—To recognise the principal indigenous plants used in medicine, to refer them to their natural orders, and to give the definitions and the distinctive characters of their several parts.

Materia Medica.—To recognise specimens of the drugs of the Pharmacopœia; to describe their characters and active principles, name the sources from which they are obtained, and the official preparations into which they enter; and to detect adulterations.

General and Pharmaceutical Chemistry.—The elementary laws of chemistry and physics, including chemical equations. To recognise the chemical substances of the Pharmacopœia; to describe the processes by which they are obtained; qualitative analysis (including the tests of the Pharmacopœia) and volumetric analysis; and to submit to a practical examination in these subjects.

Practical Pharmacy.—To translate Latin prescriptions; to detect dangerous doses; to compound and dispense correctly. To explain the processes of making the non-chemical preparations of the Pharmacopœia, and to recognise them, and to have an intimate knowledge of the Sale of Poisons (Ireland) Act.

Conditions of Entering.

The examination is held on the second Wednesday of January, April, July, and October, at 11 a.m. Fourteen clear days' notice has to be given to the Registrar, together with a receipt for the fee (5*l*. 5*s*.), which must be previously lodged in the Bank of Ireland.

Each candidate must be twenty-one years of age, and have passed the Preliminary examination or its equivalent at least one year previously. He must also produce a certificate showing that he has served a four years' engagement in the employment of a pharmaceutical chemist, registered chemist and druggist of Great Britain, or apothecary, or firm, or several of such persons. The form for this certificate is supplied by the Registrar.

The candidate must also produce certificates proving attendance at a course of practical chemistry of not less than three months, and actual work at the bench of 100 hours at *one* of the following institutions, and at a course of botany and materia medica at one of those marked with an asterisk :

- *Pharmaceutical Society of Ireland's School.
- *Pharmaceutical Society of Great Britain's School.
- Cecilia Street School of Medicine, Dublin.
- City of Dublin Technical Schools.
- Government School of Science, South Kensington.
- *Queen's Colleges, Belfast, Cork, and Galway.
- Royal College of Science for Ireland, Dublin.
- Royal College of Surgeons in Ireland, Dublin.
- Trinity College, Dublin.
- School of Physic, Trinity College, Dublin (botany and materia medica).
- Anderson's College Medical School, Glasgow.
- *Royal Academical Institution, Belfast.
- *Municipal Technical Institute, Belfast.
- Crawford Municipal Technical Institute, Cork (botany and chemistry).

The examination occupies at least three days; the first day being devoted to the written examination in all subjects, the second day to practical work in pharmacy and chemistry, and the third day to oral examination in all subjects.

The Council of the Pharmaceutical Society awards a gold medal to the best candidate of the year at the examination, provided he makes a total of not less than 240 marks out of the 300, and of 65 in each of the three subjects; and a silver medal to the second best candidate, provided he makes a total of not less than 230 marks out of the 300, and of 60 in each of the three subjects (botany, chemistry, and materia medica). Persons who fail in the examination are readmitted after six months on payment of a fee of *1l. 11s. 6d.*

Persons who have served an apprenticeship of four years to a chemist and druggist or registered druggist and two years to a pharmaceutical chemist or apothecary keeping open shop are entitled to enter for the Licence examination on fulfilling the regulations as to the Preliminary examination, curriculum, &c.

REGISTERED DRUGGISTS' EXAMINATION.

Section 8 of the 1890 Act. Any person who has served four years as an apprentice or assistant to a pharmaceutical chemist, chemist and druggist, registered druggist, or licentiate apothecary may be registered as a druggist under the Act on passing the examination prescribed therein, which is in knowledge of

- English orthography and composition.
- Arithmetic and the weights and measures of the British Pharmacopœia.
- The appearance and properties of the various drugs and chemicals in general use.
- The Sale of Poisons (Ireland) Act.

The examination is held in Dublin on the second Tuesday of January, April, June, and October, also in Belfast if twelve candidates wish to be examined there at a time. The fee is 4*l.* 4*s.*, and it has to be paid to the credit of the Society into the Bank of Ireland and the receipt, with the necessary certificates, forwarded to the Registrar fourteen days at least before the date of the examination.

APOTHECARIES' ASSISTANTS' CERTIFICATE.

The 1791 Act gives power to the Apothecaries' Hall to examine assistants for a certificate to act as assistants to apothecaries in Ireland (not in England and Wales). Anyone is admitted to the examination who is sixteen years of age; who has spent two years at practical pharmacy under a duly registered apothecary, or pharmaceutical chemist; and who is of good moral conduct. The subjects of the examination are :

Pharmacy, Practical and Theoretical, including the correct translation of medical prescriptions.

Materia Medica, including the doses of the Pharmacopœia, and the recognition of the drugs.

Antidotes used in cases of poisoning.

Pharmaceutical Chemistry, including the fundamental laws and recognition of poisonous chemicals. Knowledge of the British Pharmacopœia is requisite.

Metric System of Weights and Measures.

The examination is held on the first Friday in each month (with the exception of August), at the Apothecaries' Hall, Mary Street, Dublin, at 1 o'clock P.M. Fee, 2*l.* 2*s.* Candidates are required to give seven days' notice to the Secretary at the Hall.

A Candidate's Experience.

The following account of the examination by a candidate who recently passed shows that it is not very onerous :

> Having notified the Secretary of my desire to be examined, and enclosing the fee 2*l.* 2*s.*, I received in due course a notice to attend at 40 Mary Street, Dublin, on a date specified. On my arrival I was shown by the hall-porter into a waiting-room, where I found another candidate. The Secretary asked us to sign an attendance-book, and some twenty minutes later I was left alone, my fellow candidate being called up to the Examination Hall, where I was allowed to follow in about ten minutes. There I found a fairly complete pharmacy, and got first sight of two gentlemen who acted as Examiners. One of these asked me to read about a dozen prescriptions, none of which was of a very intricate nature, and examined me on the dose and composition of some of the ingredients. This process lasted about twenty minutes. I was then passed on to the second Examiner for what, I presume, was intended as practical pharmacy. He asked me to weigh out ʒij. sodii bicarb. and dissolve it in some water in an 8-oz. bottle. This I did, corked the bottle, and handed it to him. I was then asked to explain the metric system of weights and measures, and to recognise a pill-mortar, an ointment-slab, pill-knives, a powder-folder, and a pill-cutting machine. I had to show how I would use the last. A large pestle and mortar were shown me, and I was asked to tell what size they were. Next I got a prescription to dispense, containing potass. bicarb., tr. gelsem., tr. colchici, and infus. cascarillæ—the concentrated infusion was supplied to me. This portion of the examination occupied another twenty minutes.
>
> After spending over half an hour in the waiting-room I was ushered into a large board-room where three gentlemen were seated. One asked me to recognise some materia-medica specimens, and the second gave me some dangerous doses and preparations. After another retirement to the waiting-room for half an hour, I was finally called before some twelve or thirteen gentlemen—the Board and Court. One of these asked me what gold and silver are and how obtained. I immediately thought of the two guineas drawn from my salary, but I did not give an answer based on my reflections. The next question was—If salt is added to a solution of silver nitrate, what occurs? The third: How should lime-water be prepared, and what occurs when it is exposed to air? This constituted the chemistry examination.
>
> Having retired for about twenty minutes, my fellow candidate and I were directed to present ourselves for our certificates, which we found ready signed for us. On obtaining possession of our two guineas' worth we emerged from the precincts of "the Hall" before four o'clock, fully fledged assistants.
>
> I was under examination altogether about one hour, and in the waiting-room nearly two hours. I have since learnt that I should have given proof of my age being over sixteen, and of having served two years to a pharmaceutical chemist or apothecary: I neither gave nor was asked for such. Proof of "good moral conduct" is also required—at least, so the notice says. None of the printed requirements was enforced in my case, nor was I known personally to the Examiners or Secretary.

Other Parts of the British Empire.

The Minor certificate of Great Britain and the Irish licence are accepted for registration without examination in every part of the British Empire except Canada, on production of the certificate and proof of identity.

Scholarships.

THE following are offered by the Pharmaceutical Society of Great Britain :

Jacob Bell Scholarships.—Two (30*l.* each and education in the Society's School for ten months) awarded annually. The examination is in June in London, Edinburgh, and Manchester. Subjects: Latin, French, or German, English, arithmetic, botany, chemistry, and pharmacy.

Manchester Pharmaceutical Association Scholarship.—Similar in value to the Bell Scholarship, but the instruction may be taken in any school approved by the Council. Subjects of the examination same as the Bell, and held at the same time.

Salters' Research Scholarship, Redwood Scholarship, Burroughs Scholarship, and Pereira Medal are awarded to pharmaceutical chemists.

Schools of Pharmacy.

THE demand for educational facilities for pharmacists has been very well met in Great Britain, the schools and colleges of pharmacy being provided, mainly by private enterprise, on a most liberal scale. In addition to the schools established for the teaching of pharmaceutical subjects the various Science and Art schools carried on in connection with South Kensington under a system of Government grants, and to be found in even small towns, are an excellent means by which apprentices and assistants can lay the foundation of the more serious work that they will need to embark on as the time for the qualifying examination draws near. The Pharmaceutical Society of Great Britain issue a pamphlet, "Hints to Students," which gives some useful "tips" on the course of study which students should commence as early as possible in their career. The booklet is supplied free on application to the Secretary of the Society. The methods of study pursued at pharmacy schools usually involve attendance for the whole time, but most of these institutions have evening and afternoon classes designed to meet the wants of those who cannot or do not wish to spend their whole time at a college. Whichever course the student is desirous of taking he will do well to make his inquiries in good time and particularly to note the length of the courses, the fees, and if the last-named are inclusive. Usually a small charge is made for destructible chemical apparatus, which the student can generally obtain at the school or college at about a sovereign. The Secretaries of the institutions should be addressed for copies of prospectuses, and interviews are always willingly accorded to prospective students. In the following paragraphs the salient features of each school are given without any pretence at exhausting the subject.

LONDON.

THE SCHOOL OF PHARMACY,

17 Bloomsbury Square, London, W.C.

Staff: BOTANY—Professor J. Reynolds Green, Sc.D., F.R.S.; Demonstrator: T. G. Hill, A.R.C.S., F.L.S. CHEMISTRY AND PHYSICS—A. W. Crossley, Ph.D.; Assistant-Lecturer: T. E. Wallis, B.Sc.; Demonstrator: F. G. C. Walker. PHARMACEUTICS—Professor Henry G. Greenish, F.I.C.; Demonstrator: J. Trevor Cart.

The session commences on October 3, 1904. Two courses of study are given—an elementary and an advanced course. The elementary course includes subjects required for the Minor, and extends to the end of June, 1904. The advanced course extends from October to the end of March. Students may, however, enter the school at any time and for any subject or part of the course, but it is advantageous to enter at the commencement of the course in October. The fee for the elementary course is 32l. 11s. (in instalments), or 30l. (if paid in one sum), and for the advanced course 18l. 18s. or 18l. There are short terms—winter and summer—for those students who have completed the elementary or advanced course, for which the fees are 6l. 6s. and 4l. 4s. The lectures on the various subjects can be taken separately. The Dean of the School can be addressed for further particulars, but applications for prospectuses and admission to the School must be made to the Registrar of the Pharmaceutical Society.

MUTER'S (SOUTH LONDON) SCHOOL OF PHARMACY.

325 Kennington Road, London, S.E.

Visiting Examiner, Dr. John Muter, F.R.S.E. Staff: Mr. A. H. M. Muter, F.I.C., Mr. J. Thomas, B.Sc., and Mr. W. A. Whatmough, Ph.C.

The session at this school lasts from September until the middle of July. Fresh courses of lectures for the Minor and Major begin on September 12, January 2, 1905, and April 3. The fees for the Minor are 8l. 8s. a term. A short term for the October examination is conducted at a fee of 4l. 4s., the course beginning on August 22. The Major fees are 6l. 6s. a term. A free-tuition scholarship is offered for competition in each year, and is tenable for one year. The next examination for this is to be held on September 9.

WESTMINSTER COLLEGE OF CHEMISTRY AND PHARMACY (LIMITED),

Trinity Square, Borough, London, S.E.

Principal, Mr. G. S. V. Wills, F.L.S. Secretary, Mr. J. E. Walden.

There are during the school year four courses of lectures, beginning in August, October, January, and April, and three for the Major. The next session begins on August 23. The fee for a Minor course is 8l. 8s.; two courses, 12l. 12s.; until qualified, 15l. 15s. Major session, 6l. 6s.; until qualified, 10l. 10s. Apothecaries' Hall, one session, 5l. 5s.; two sessions, 8l. 8s. Evening lectures with practical work are also given, the fee for a three-months' course being 1l. 1s. Postal systems are arranged for all examinations. A special set of text-books has been published by the principal, these embracing chemistry, botany, materia medica, pharmacy, and prescription reading.

IMPERIAL COLLEGE OF CHEMISTRY,

49 and 51 Imperial Buildings, Ludgate Circus, London, E.C.

Principal, Mr. Frederick Davis.

Courses of study begin in January, April, July, and October. For the Minor examination students are advised to attend the school for six months, but the work is covered in three months. The fee is 10l. 10s. for the three months' course, 17l. 17s. for six months. Special Major tutorial course, 8l. 8s. Students may enter for single subjects. Evening classes are held on the first four nights of the week. Courses of instruction are organised to meet the requirements of the Apothecaries' Hall, the Institute of Chemistry, and the Conjoint Board of the Royal Colleges of Physicians and Surgeons. A feature of this college is the organisation of visits to chemical-works.

THE METROPOLITAN COLLEGE OF PHARMACY,

160 and 162 Kennington Park Road, London, S.E.

Staff: Mr. W. Watson-Will, F.L.S., F.C.S., Ph.C. (Principal), Mr. Harry Lucas, F.C.S., Ph.C., Mr. F. Filmer de Morgan, F.C.S., Ph.C., Mr. David J. Williams, F.C.S., Ph.C., Mr. Walter S. Carver (Secretary).

The session consists of three courses—viz., winter (beginning on September 1), spring (commencing on January 1), summer (starting on April 1). An autumn tutorial course is held from August 15 to October 12. Evening continuation classes are held on Monday, Tuesday, Wednesday, and Friday, and this year a new arrangement for assistants in business is the classes on Wednesday and Thursday afternoons, with two hours' practical and two hours' class work. The fees are: Major course, one session, 8l. 8s.; two sessions, 15l. 15s. Minor course, one session, 10l. 10s.; two sessions, 19l. 19s. Autumn tutorial course, 6l. 6s. Ladies' classes for the Apothecaries' Hall examination are also held

LONDON COLLEGE OF CHEMISTRY, PHARMACY, AND BOTANY,

323 Clapham Road, London, S.W.

Teachers: Mr. Henry Wootton, B.Sc. Lond. (Principal), Mr. A. Kirkland, Ph.C., Mr. G. G. Watt, Ph.C., and Mr. J. Wilson, M.A.

The terms commence on October 3 and at the beginning of January and April. The fees for the Minor course per term are 9l. 19s. 6d. (two terms, 17l. 17s.); Major, 6l. 16s. 6d. (two terms, 11l. 11s.). In addition to the regular lectures and practical work, special tutorial classes are held daily at 4 P.M., except Saturday. A special revision course for advanced students begins on August 17; fee till the October examination, 5l. 5s. The session opens on October 3 (students backward in practical work can begin September 5). Evening classes are held, beginning on September 5, the fees for which vary from 1l. 1s. to 2l. 7s. 6d., according to the number of classes attended each week.

Special classes are held daily, commencing September 26, in preparation for the examinations of the College of Preceptors, the fee for which is 4l. 4s. per term of three months. The botanic garden is a feature of the London College.

THE CENTRAL SCHOOL OF PHARMACY,

2 Charterhouse Street, Holborn Circus, E.C.

Principal, Mr. C. Edward Sage, Ph.C., F.C.S.

The summer revision course began on August 3 for the October Minor. The winter course begins on September 12, the fees being, until Christmas, 10l. 10s., until April, 18l. 18s. Evening classes are held on Monday, Wednesday, and Friday, the fee being 4l. 4s. for a three-months' course.

BRIXTON SCHOOL OF CHEMISTRY AND PHARMACY,

171 Brixton Road, London.

Principal, Dr. A. B. Griffiths, F.R.S.Ed.

Classes are held for the Minor, Major, and Apothecaries' Hall examinations. There is a post-graduate course in research-work and commercial analysis. The laboratories are fitted with the best appliances.

Apothecaries' College for Ladies,
112 St. George's Road, Southwark, London, S.E.

For particulars apply to the Principal, Mr. G. S. V. Wills, of the Westminster College.

PROVINCIAL.

Barrow-in-Furness.

At the Higher Grade School, Duke Street, evening classes are arranged in theoretical and practical chemistry and botany which are suited for pharmaceutical students. The session begins early in September, and particulars can be obtained from Mr. W. Hutchinson, Secretary of the Education Committee, the Town Hall.

Birmingham.

Mr. F. H. Alcock, F.I.C., *The Analytical Laboratory, Temple Chambers, Broad Street Corner*, gives tuition in all pharmaceutical subjects. Fees, 8*l*. 8*s*. per quarter. An instructive time-table will be sent on receipt of stamped addressed envelope.

The Central School of Pharmacy, 90 *New Street*.—Mr. Stokes Dewson has day and evening classes for the Major and Minor apothecaries' assistants' and preliminary examinations. The new courses begin on September 1.

Municipal Technical School, *Suffolk Street*.—There are special courses of chemistry on Wednesday afternoons for the Minor examination, the next session commencing early in September. The courses extend over two sessions, and consist in each course of about an hour's lecture and two hours' practical work, from 2.30 to 5.30 p.m. weekly. The lecturers are Messrs. D. F. Twiss and A. W. T. Hyde. The fee for either lecture course is 2*s*. 6*d*.; for the combined course, 5*s*. There are also botany classes (elementary, advanced, and practical) suited for pharmaceutical students (fee 3*s*. 6*d*.), and a materia-medica cabinet has been provided by Southall Brothers & Barclay (Limited) for the use of students.

Blackburn.

Municipal Technical School.

A complete course of classes for the Minor examination has been established by the committee of the Technical Schools, of which Mr. J. Hindle is a member. Mr. G. B. Pickworth (72 Victoria Street, Blackburn), Hon. Secretary of the North-East Lancashire Chemists' Association, will give particulars of the arrangements to any chemist's assistant or apprentice.

City of Bradford Technical College.

Head of Department, Professor W. M. Gardner. Lecturers in Chemistry, Mr. B. North and Mr. S. F. Stell. Lecturer in Botany, Materia Medica, and Pharmacy, Mr. W. West.

The general pharmaceutical course, which includes chemistry and physics (lectures and laboratory), botany (lectures and laboratory), materia medica and pharmacy, and dispensing (lectures and practical), extends over two years, and is arranged so that chemists' apprentices can completely prepare for the Minor and Major examinations of the Pharmaceutical Society during the course of their ordinary work. The classes are held on three afternoons each week, but evening classes are available for those who find it impossible to attend during the day.

Brighton.

A pharmaceutical course for Minor and Major students has been arranged at the Municipal School of Science and Technology, Richmond Terrace. The Minor classes require the attendance of students from 2 to 4.30 on Tuesdays, 10 to 12.30 on Wednesdays, 2 to 4.30 on Thursdays, and 2.30 to 3.30 on Fridays; the Physics classes are held on Tuesday and Thursday afternoons, or on Saturday morning, and are thus available for apprentices and assistants whilst engaged in business; but evening classes are also held both for Minor and Major students. The fee for a complete Minor course is 2*l*. 2*s*. Application for admittance should be made to Dr. C. H. Draper, B.A., the Principal.

Bristol University College.

Principal, Professor C. Lloyd Morgan, F.R.S. Professor of Chemistry, Dr. Morris M. Travers, F.R.S. Lecturer on Chemistry, Dr. Francis. Assistant-Lecturer on Chemistry and Lecturer on Pharmaceutics, Mr. Oliver C. M. Davis, B.Sc., Ph.C.

The chemistry classes at nominal fees are useful for pharmaceutical students, and instruction in practical chemistry can be had in the chemical laboratory at fees which depend on the number of evenings a week devoted to the subject. A course in pharmaceutics, meeting the requirements of the Minor examination of the Pharmaceutical Society, has been arranged.

Cambridge.

The Cambridge Pharmaceutical Association, through their Secretary (Mr. B. S. Campkin, Mill Road), will furnish particulars of classes in botany and chemistry suitable for pharmaceutical students. The classes are held at the Technical Institute, in connection with the Science and Art Department, South Kensington.

Derby.

Derby Technical College.

Principal, Mr. F. W. Shurlock, B.Sc., B.A. Teachers: Chemistry, Mr. W. H. Lewis, M.A. Pharmacy, Materia Randles, B.Sc. Materia Medica, Mr. H. Hoare. Pharmaceutics, Mr. S. Taylor, Ph.C.

Classes for pharmaceutical students are held in all the subjects required for the Minor and Major examinations and the Assistants' examination of the Apothecaries' Hall. The classes in pharmaceutics (pharmacy and materia medica) are held on Wednesday from 2 to 4, the fee being 1*l*. 1*s*. per term.

Exeter.

School of Pharmacy,
Royal Albert Memorial College.

Lecturers: Physics, The Principal and Mr. J. Trott. Chemistry, Mr. W. H. Lewis, M.A. Pharmacy, Materia Medica, and Pharmacy Law, Mr. H. Wippell Gadd. Botany, Mr. J. L. Sager, B.A.

A complete course of instruction for the Minor examination has been arranged in day and evening classes. Mr. H. Wippell Gadd has arranged a concurrent curriculum for assistants and apprentices in business.

Lancaster.

Municipal Technical School, The Storey Institute.

Principal, Mr. William French, M.A., F.I.C. Chemistry, The Principal and Mr. William Wyatt, Ph.C. Physics, Mr. T. C. Joyce, Inter. B.Sc., and Mr. T. McBrathney, B.Sc. Botany, Mr. William Wyatt, Ph.C.

Practical work as well as lectures given in all subjects.

Leeds.

The University.

There are courses in chemistry, physics, and botany at the University suitable for pharmacy students. Professor A. Smithells, F.R.S., is the professor of chemistry, and Mr. J. H. Gough, Ph.C., F.C.S., is demonstrator in practical pharmacy.

College of Pharmacy, Clarendon Road.

Principal, Mr. F. Pilkington Sargeant, F.C.S., Ph.C.

There are both full and part time classes at this College, the next full term beginning on October 4. A short course commences on August 15, on which date students may enter for either the October or January examination. The part-time classes resume work on August 15. The fee for three months' full-time class, Minor or Major, is 8*l*. 8*s*.; for six months, 14*l*. 14*s*. For the evening and weekly classes the fee is 4*l*. 4*s*. for a six-months' course.

Leeds Technical School (in connection with the Leeds Institute of Science, Art, and Literature).

Head Master, Mr. R. E. Barnett, B.Sc., A.R.C.S.

There are evening courses of study at this school in chemistry, physics, and botany during the winter. The classes open on September 19. A suitable course of classes in the above subjects has been arranged for pharmaceutical students. Particulars of this, with complete syllabuses, are given in the "Calendar" of the Institute, to be obtained (post-free, 5*d*.) from the Secretary, Mr. Arthur Tait, Leeds Institute, Cookridge Street.

Liverpool.

The University
School of Pharmacy.

Chemistry, Professor J. C. Brown, D.Sc. Physics, Professor L. R. Wilberforce, M.A. Botany, Professor R. J. H. Gibson, M.A. Materia Medica, Professor W. Carter, LL.B. Lecturer on Pharmacy, Mr. Prosper H. Marsden, Ph.C.

Complete courses of instruction are provided, adapted to the requirements of candidates preparing for either the Minor or Major examinations of the Pharmaceutical Society of Great Britain. The Manchester Pharmaceutical Scholarship may be held at this school. The composition fees are eighteen guineas for either the Minor or Major course.

School of Pharmacy, 6 Sandon Terrace, Upper Duke Street.
Principal, Mr. R. C. Cowley.

The full-time course of study for the Minor begins on September 12 and continues till Christmas, the fee being 10*l.* 10*s.* The January and April courses continue till the April and July examinations, the fee being 9*l.* 9*s.* The fee for two full courses, which is recommended by the principal, is 16*l.* 16*s.* Major full-time classes are held from nine to five daily, the fee for a course of three months being 9*l.* 9*s.* There are also part-time classes held on Wednesdays from 3 to 10 P.M., the session beginning on September 14. The fee for a full course is 7*l.* 10*s.* A tutorial class is held on Tuesdays for advanced students, these commencing on September 13.

MANCHESTER.

The Victoria University, Pharmaceutical Department.

Vice-Chancellor, Mr. A. Hopkinson, K.C., M.A. Dean, Professor William Stirling, M.D. Physics, Professor A. Schuster, Ph.D., F.R.S. Chemistry, Professor H. B. Dixon, F.R.S., and Professor W. H. Perkin, F.R.S. Materia Medica and Pharmacy, Professor R. B. Wild, M.D., M.Sc., M.R.C.P., and Mr. Jas. Grier, Ph.C. Lecturer in Pharmacognosy, Mr. Jas. Grier. Botany, Professor F. E. Weiss, D.Sc., and Dr. F. V. Darbishire, B.A.

The courses for the Minor and Major examinations each extend over one winter session (October to April). A composition fee of 15*l.* 15*s.*, payable at the commencement of the session, admits to the college courses for either the Minor or Major examination. Students who have paid the composition fee for a winter session may continue their studies during the ensuing summer session for a further fee of 4*l.* 4*s.* The Manchester Pharmaceutical Scholarship is tenable at this college. Students have access to a very complete museum of materia medica belonging to the medical school. Pharmaceutical students who desire to obtain the degree of B.Sc. in the Victoria University, and who have passed the Matriculation examination, may so arrange their courses for the Minor and Major pharmaceutical examinations as to include the other subjects required for the Intermediate, which must be taken at the end of their first year. The Dean of the Medical School enrols students for the winter session from September 27 to October 3.

Manchester College of Pharmacy,
225A *and* 227A *Oxford Road.*
Director, Mr. Chas. Turner, F.C.S.

The year's work is divided into the following courses: August 22 to January examination (fee 10*l.* 10*s.*), October to the April examination (fee 14*l.* 14*s.*), and January to the July examination (fee 14*l.* 14*s.*). The next term, beginning on August 22, will include a special class for advanced students who wish to enter for the October examinations and a complete course for the January examinations. A six-months' course for the April examination will begin on October 3. Local classes are held on Tuesdays and Wednesdays from 2 to 10 P.M., and evening classes on Mondays and Wednesdays from 7 to 10 P.M. The fees for these classes are 15*s.* a month, or six months 4*l.* 4*s.* There are also classes for the Apothecaries' Hall examination.

Northern College of Pharmacy,
Burlington Street, Manchester.
Principals, Mr. Geo. Clayton, F.C.S., and
Mr. F. Lawson, B.Sc. (London).

For the Minor a four-months' and a seven-months' course commence simultaneously on August 29, whilst a three-months' and a six-months' course begin on October 3. This College offers special facilities for apprentices and assistants at the part-time classes, which are held on Tuesdays and Wednesdays in the afternoon, and Monday, Tuesday, and Wednesday in the evening. The fee for a full-time course is 14*l.* 14*s.* for six months, for the part-time courses 4*l.* 4*s.* (January to July) and 2*l.* 10*s.* (September to Christmas). For the Major the courses commence in September, January, and April. Fee for the full time course, 6*l.* 6*s.* Courses are also held for the Apothecaries' Hall examination.

NEWCASTLE-ON-TYNE.

North of England School of Chemistry and Pharmacy,
55 *Northumberland Street.*
Principals: Mr. F. R. Dudderidge, F.C.S., and
Mr. J. G. Murdock, Ph.C.

There are four sets of Minor classes in operation at this school: Full-time day class, fee 8*l.* 8*s.* per term of twelve weeks; evening classes meeting three times a week, fee 3*l.* 3*s.*; afternoon classes on Wednesday and Thursday, fee for either day 3*l.* 3*s.*; and a special weekly class for junior assistants and apprentices. Day and evening classes are also held for the Major examination, at fees of 7*l.* 7*s.* per term for the day course and 3*l.* 3*s.* for the evening course. Terms commence in October, January, and April, and a short course of lectures for the October examinations commences on August 15. There are also classes for the Apothecaries' Hall certificate and private tuition for the 1st M.B. Durham.

The Durham College of Science.

Courses of lectures on chemistry, physics, and botany can be taken by pharmaceutical students at this college.

NOTTINGHAM.

School of Pharmacy,
Carlton Chambers, 13 Victoria Street.
Principal, Mr. S. Royce, Ph.C.

In the Minor course a new session began on July 18 and the autumn session is to commence on September 26. The fees for the term of three months are 8*l.* 8*s.*, or 15*l.* 15*s.* for six months. Evening classes are held on Monday and Friday from 8 to 10 P.M., and practical work classes on Thursday from 2 to 5 P.M.

University College.

Classes are held in all the subjects required for the Minor and Major, and the necessary work is arranged for in the chemical, botanical, and physical laboratories in evening classes. The fees range from 5*s.* to 15*s.* the course. Professor F. S. Kipping, F.R.S., is the head of the chemistry department.

PLYMOUTH.

Municipal Science, &c., Schools.
Lecturers in Chemistry, Mr. J. B. Brown, B.Sc., and
Dr. J. R. Thackrah, M.A.

There are courses of chemistry, botany, physics, and practical chemistry, and the Secretary informs us "that there are no material alterations in the arrangements for next session."

READING.

UNIVERSITY COLLEGE, READING, SCHOOL OF PHARMACY.

Principal: Mr. W. M. Childs, M.A. Lecturers: Chemistry, Dr. C. M. Luxmoore, F.I.C. Physics, Dr. G. J. Burch, F.R.S. Botany, Mr. F. W. Keeble, M.A. Materia Medica, Mr. B. J. Austin, F.L.S.

The subjects of study are those comprised in the syllabus of the Minor examination. A complete course extends over three terms, the composition fee for which is 18*l.* A course of instruction for the Major examination will be provided in the second year.

SHEFFIELD.

University College.

Classes in the three-years' course for Minor students are held on Wednesday, Thursday, and Friday evenings. Mr. John Austen, Ph.C., is the lecturer in materia medica. The fees are: Materia medica, 10*s.* 6*d.*; chemistry, two years, 30*s.* each; practical chemistry, 30*s.*; botany, two years, each 30*s.* Some notes on the educational arrangements at this college are given in the *C. & D.*, July 30.

College of Pharmacy, Princess Buildings,
116A-118A *The Moor.*
Principal, Mr. J. W. J. Turner, Ph.C.

Day classes are held, commencing October 3, January, and April. The fees for a three-months' Major course are 6*l.* 6*s.*; Minor, 8*l.* 8*s.*; for a six-months' Minor course the fee is 13*l.* 13*s.* Evening part-time and correspondence classes are also in operation. A class for lady-students preparing for the Apothecaries' Hall examination meets on Tuesday and Friday afternoon, and in the evenings a class is held for those studying for the College of Preceptors examination.

SOUTHAMPTON.

Hartley University College.
Principal, Dr. S. W. Richardson, D.Sc. (Lond.), B.A. (Camb.). Professor of Chemistry, Dr. D. R. Boyd.

Courses suitable for the Minor and Major examinations can be arranged for in the chemical, botanical, and physical departments of this college. The next session begins on September 28.

SPALDING.

Grammar School.

Evening classes are held in practical chemistry, suitable for Minor students, Mr. E. Wightman Bell, F.C.S., being the teacher.

WOLVERHAMPTON.

Municipal Science and Technical School.

Teachers: Inorganic and Organic Chemistry, Mr. W. Whitehouse, F.C.S.; Physics, Mr. A. T. Harrison, B.Sc.; Botany, Mr. Sidney Phillips, Ph.C.; Latin, Mr. F. G. Griffiths, M.P.S.

Day classes are held in chemistry and physics, and evening classes in chemistry, physics, and botany. Special arrangements are made for the requirements of pharmaceutical students. For other particulars and programme, the Registrar should be addressed.

SCOTLAND.

The Royal Dispensary and School of Pharmacy,

21 *West Richmond Street, Edinburgh.*

Principal, Mr. William Duncan, Ph.C., F.C.S.

Since the institution of the Royal Dispensary in 1776 pharmacy and materia medica have been regularly taught, but in 1884 the classes were extended to embrace all the pharmaceutical examinations. The session is divided into three terms, commencing in October, January, and April, elementary and advanced courses being carried on simultaneously. For Minor and Major students the fee for one term is 8*l.* 8*s.*; shorter terms at proportional rates. Evening classes, beginning in September and covering the same ground as the day classes, are held on Monday, Tuesday, and Thursday at 8.30. The fee is 3*l.* 3*s.* for the three-months' course.

Central School of Pharmacy,

26 *Clyde Street, Edinburgh.*

Principal, Mr. W. B. Cowie, Ph.C.

Full courses of instruction commence in October, January, and April, and a short course begins in August. Evening classes are also held. Fees per term for Minor or Major course, 8*l.* 8*s.* (day) and 3*l.* 3*s.* (evening). A class for preparing students for Preliminary examinations the certificates of which are accepted by the Pharmaceutical Society is also held.

Glasgow School of Pharmacy,

Blythswood Chambers, 180 *West Regent Street, Glasgow.*

Principal, Mr. John Lothian, Ph.C.; Assistant, Mr. Peter Fenton.

Full courses for the Minor and Major commence on October 3 and last till April. The summer course (three months) begins in April, and the autumn course, which begins on August 15, lasts till October 1. Fees, 8*l.* 8*s.* per quarter. Evening classes (begin October 5) are 1*l.* 1*s.* per evening in the week per quarter.

West of Scotland College of Pharmacy,

157 *St. Vincent Street, Glasgow.*

Principal, Mr. T. S. Barrie, F.C.S., assisted by Messrs. W. Graham, W. C. Macmaster, M.A., and J. McKenzie, M.A.

At this institution the fees for the day classes for the Minor are 8*l.* 8*s.* per term of three months, or 15*l.* 15*s.* for six months.. Evening and correspondence classes are also held, and there is a special class for those almost ready for examination. Tuition for the Major is given privately and special subjects can be taught when desired. A weekly afternoon class is held on Tuesdays from 3 to 9 p.m., for which the fee is 2*l.* 2*s.* per quarter.

Robert Gordon's College in Aberdeen.

School of Pharmacy.

Head Teacher, Mr. Gilbert Simpson, Ph.C.

The pharmaceutical department of this college embraces courses of study for the Minor and Major examinations. The term for the October examination begins on August 29. The next ordinary courses begin (1) October 5, (2) January 5, and (3) April 5. The fee for the short course is 3*l.* 3*s.*; for ordinary term, 7*l.* 7*s.* Evening classes are also held, for which the fee is 3*l.* 13*s.* 6*d.*; the next course begins on September 26. Single subjects, the fees for which range from 10*s.* 6*d.* to 21*s.*, may be taken if desired. The Aberdeen Pharmaceutical Association offer prizes (each consisting of three months' free tuition in the day classes) to students of the evening school at the end of the session.

IRELAND.

Pharmaceutical Schools of Chemistry, Botany, and Materia Medica,

67 *Lower Mount Street, Dublin.*

Practical Chemistry Class, Director Professor Tichborne; Demonstrator Mr. P. Kelly, M.P.S.I.; Theoretical Chemistry and Physics, Mr. T. A. Shegog, F.I.C., F.C.S.; Lecturers of the Botany and Materia Medica School, Messrs. H. Hunt, M.P.S.I., and A. H. Laird.

The fees for the courses in accordance with the regulations of the Society are: Practical chemistry (six months), 6*l.* 6*s.*; theoretical chemistry and physics (four months), 1*l.* 1*s.*; botany and materia medica (three months), 2*l.* 2*s.* The winter course begins on October 1. The practical chemistry class is held on Mondays, Wednesdays, and Fridays from 8 to 10 p.m., and comprises at least a hundred hours' actual bench-work. The class for theoretical chemistry and physics is held on Tuesdays and Thursdays from 8 to 9.30 p.m. Each session of the School of Botany and Materia Medica consists of twenty-six lectures, and the classes are held on Tuesdays and Thursdays at 8 p.m., with occasional Saturday demonstrations. The Registrar, 67 Lower Mount Street, Dublin, will furnish full particulars, and receives the fees.

Municipal Technical Institute, Belfast.

Principal, Mr. Fras. C. Forth, Assoc.R.C.Sc.I. Teaching Staff of Pharmaceutical Department: Mr. S. Templeton, Assoc.R.C.Sc., F.I.C.; Mr. T. Harper, M.P.S., L.P.S.I.; Mr. Chas. McMullan, A.I.C.; Mr. James Andrews; and Mr. Chas. J. Still.

Full courses of instruction in all pharmaceutical subjects begin in the week commencing September 12. Additional courses of instruction in practical chemistry, botany, and materia medica begin on January 9, 1905. Fees: Chemistry, 10*s.*; practical chemistry (100 hours), 1*l.* 10*s.*; botany, 7*s.* 6*d.*; materia medica, 7*s.* 6*d.*; pharmacy, 10*s.*

Appointments.

Poor-law Dispensers for Unions under the Local Government Board of England are open to those who hold certificates as Licentiates of the Society of Apothecaries, London; apothecaries' assistants (under the English Act); Army compounders of medicines; chemists and druggists (G.B.), or pharmaceutical chemists (Ireland.) Salaries begin at 120*l.*, and can be increased by 10*l.* every fourth year until a maximum of 180*l.* a year is reached in the metropolitan area. In the provinces there is no fixed limit, the salary being fixed and varied by the Guardians of each Union, with the sanction of the Local Government Board. Dispensers receive pensions on retirement through age or ill-health, a deduction from the salaries being made in respect to this arrangement.

Prison Dispenserships are open to chemists and druggists between twenty-four and thirty years of age. It is necessary to join as a warder and wear uniform. Residence is provided, and the salary is from 105*l.* to 140*l.* a year.

Dispensers in Naval Hospitals.—There are sixteen of these berths at home and abroad. Candidates for vacancies (which are advertised as they occur) must be chemists and druggists or pharmaceutical chemists, and not less than twenty-one or more than twenty-eight years old. Entry into the Service is by examination, conducted by the Civil Service Commissioners, but the candidates are first selected by the Medical Department of the Navy, Northumberland Avenue, W.C., to the Director-General of which department applications respecting vacancies and nominations should be addressed. The examination (fee 10*s.*) is in (1) pharmaceutical chemistry; (2) materia medica, including the British Pharmacopœia and its Appendix, poisons and their antidotes, dosage of remedies, and preparation of antiseptic solutions; (3) recognition of chemicals and drugs employed in medicine; and (4) practical pharmacy, prescription-reading, and detection of errors in doses. 3 and 4 are *vivâ voce* subjects. The pay is 110*l.* a year to begin with, and rises by 5*l.* every two years to 130*l.*, and then by 10*l.* every two years to 230*l.* Additional allowances of from 20*l.* to 40*l.* a year are made to dispensers in charge of stores. Free quarters are provided, and allowances made to those serving on foreign stations to meet the increased cost of living. Dispensers get a month's holiday yearly, and those on foreign stations may reserve their holiday from year to year so as to obtain a longer period of absence, but *locum tenentes* have to be found "without putting the public to any expense in providing substitutes." Pensions are granted on retiring.

Army Compounders are non-commissioned officers in the Royal Army Medical Corps, who pass examinations in pharmacy, materia medica, posology, and similar subjects conducted by the medical officers. It is necessary to enlist in the corps, and work up to the position, which entitles a man to enter for the examination.

Chemists in the Woolwich Laboratory.—The position of junior assistant chemist is open to competition under Civil Service rules. The examination is in chemistry and physics.

The Practice of Medicine.

All applications in respect to *registration* as medical or dental students should be addressed to the General Medical Council's Branch Registrar in the country where the person intends to pursue his studies—viz., *for England and Wales*, Mr. Henry E. Allen, LL.B., B.A., 299 Oxford Street, London, W.; *for Scotland*, Mr. James Robertson, 54 George Square, Edinburgh; *for Ireland*, Mr. Richard J. E. Roe, 35 Dawson Street, Dublin.

The requirements for registration as students and as general medical practitioners are embodied in two official publications—viz., "Resolutions of the General Medical Council on (*a*) Professional Examination; (*b*) Professional Education" (price 6*d*. each); "Regulations in Regard to the Registration of Medical and Dental Students" (price 6*d*.). Both are sold by Messrs. Spottiswoode & Co. (Limited), 54 Gracechurch Street, London, E.C.

The General Council of Medical Education and Registration of the United Kingdom, to give its full title to the body created by the Medical Act of 1858, is empowered by law to regulate medical education in this country, and to register as medical practitioners all persons who receive from statutory examining bodies certificates to practise medicine, surgery, and midwifery. No one who receives such a certificate is compelled by law to be registered, but without registration fees cannot be recovered for professional services, certain public appointments as medical officer cannot be held, and certificates signed by such unregistered (although qualified) persons may not be valid.

The Council does not conduct any examinations for qualification: it is only when persons whose names are on the Medical Register are accused of infamous conduct in a professional respect that the Council resolves itself into a Court of Ethics, and examines the accused persons.

The conditions laid down by the Council for qualification as a medical practitioner are briefly as follows:

1. The candidate must pass a preliminary examination in general education and be registered as a medical student, but not before he or she has attained the age of sixteen years.
2. The candidate must study the subjects of the prescribed medical curriculum for a period of five academic years at one or more of the colleges, schools, or institutions approved by the Council or mentioned in the Acts, and pass at least three examinations in the professional subjects, the last not within fifty-four months of the date of registration as a medical student.

THE PRELIMINARY EXAMINATION.

In the regulations referred to at the head of this section is a list of Preliminary examinations which the General Medical Council recognise for registration as a medical student. The list comprises University examinations, Government examinations and examinations of chartered bodies held in the United Kingdom, as well as the examinations of Colonial Universities and certain Colonial Colleges and of foreign Universities. The Council requires any examination to comprise the following subjects:

(*a*) *English* (Grammar, Paraphrasing, Composition, questions on English History and Geography).

(*b*) *Latin* (Grammar, Translation into English from unprescribed Latin books, Translation into Latin of a continuous English passage, and of short idiomatic English sentences).

(*c*) *Mathematics* (Arithmetic; Algebra, including easy quadratic equations; Geometry, including the subject matter of Euclid, Books I., II., III., and simple deductions).

(*d*) *One* of the following subjects:

(α) *Greek* (Grammar, Translation into English from unprescribed Greek books, Translation into Greek of short idiomatic English sentences); *or*

β) *A Modern Language* (Grammar, Translation into English from unprescribed Books, Translation of a continuous English passage, and of short idiomatic English sentences).

Latin is obligatory, the only exception being that in the case of natives of India or other Oriental countries, whose vernacular is other than English, an examination in a classical Oriental language may be accepted as equivalent to an examination in it. The final qualification which the student desires to take will determine what Preliminary examination he should pass. If he proposes to take a university degree in medicine he must select the examination which the University dictates. As to this the University Calendar should be consulted, or the regulations for medical degrees of the University may be obtained from the Secretary or Dean of the Medical Faculty as the outcome of a polite request. If the student merely wishes to get a recognised College diploma, one of the following Preliminary examinations will suit his purpose:

College of Preceptors, London.—Examinations for First-class certificate (the required subjects to be passed at one, or not more than two examinations); preliminary examination for medical students (the required subjects to be passed at one time).

Educational Institute of Scotland, Edinburgh.—Preliminary medical examination (the required subjects to be passed at one time).

Royal Colleges of Physicians and Surgeons in Ireland, Dublin.—Preliminary examination (the required subjects to be passed at one time).

Particulars in regard to any of these can be obtained from the secretaries of the respective bodies. After passing the examination, and at the time of commencing the professional curriculum, the student should be registered as such by the Branch Registrar. He must produce evidence that he has attained the age of sixteen years, and also produce evidence that he has commenced medical study at a university or school of medicine, or at a scientific institution recognised by one of the licensing bodies and approved by the Council. The commencement of the course of professional study recognised by any of the licensing bodies is not reckoned as dating earlier than fifteen days before the date of registration.

THE PROFESSIONAL CURRICULUM.

The best introduction we can give to this subject is the experience of a chemist and druggist who has recently qualified. Many who enter pharmacy and qualify as chemists and druggists think afterwards that they can do better in the higher branch. The following is the experience of one who has accomplished his desires, and who voluntarily writes his record as some return for the help he received from The Chemist and Druggist when he was behind the counter:

> Having recently qualified as a medical man, after being in business for myself as a chemist and druggist for thirteen years, I thought that a short account of the work to be gone through to qualify as a doctor, and also a statement of exactly what it cost me to the very penny in order to do so, would perhaps be of some interest in an Educational Number like the present one.
>
> Doubtless there are many chemists and druggists who are casting longing eyes on medicine, but hesitate to take a plunge into practically the unknown. It is a great change, but one that I, at any rate, will never regret. A new horizon has opened out. There are so many branches in medicine and surgery that one is bound to find something that will just suit him. One makes many and close friendships, and I honestly think that nowhere will one meet a finer and nicer class of young fellows, taking them all round, than medical students, and none who work so hard and so consistently, in spite at times of appearances to the contrary. Age does not debar one from any of the pleasures of college life, for although I was at least twice as old as the majority of my fellow-students, I found it made no difference in the good-fellowship that was always apparent. In fact, it made me on that account the recipient of numerous confidences from students who otherwise would probably have kept their troubles and anxieties to themselves. Even medical students

have their private worries, however careless and rackety on the surface they may seem.

Selecting
lim.

When I decided to start medicine, I had to decide between a Preliminary examination, that would open the door to a University, or one that the other licensing bodies would accept. I found that practically the difference then (1897) and, so far as I can see, now, was that for a University Preliminary examination mechanics had to be taken as a subject, while for the others it could be omitted. As I had never learned mechanics as a boy, and detested the subject, I naturally chose the easier path. Result—passed the Medical Preliminary examination of the College of Preceptors in March, 1898, which entitled me to register as a medical student and enter for the examinations of the Conjoint Colleges of Physicians and Surgeons, London, the Apothecaries' Society, London, the "Triple" of Edinburgh and Glasgow, or an Irish qualification. I chose a London one.

College-work.

I took out rather more college-work than I need have done. Later on I will point out what it was. I was living within easy reach of Manchester, and therefore the work was taken out at the Owens College and Royal Infirmary of that city. The work to be gone through is the same wherever taken out, although the arrangement of it varies somewhat at different centres.

The academical year, as far as college-work is concerned, is divided into a winter and a summer session, the former commencing at the beginning of October and terminating at the end of the following March—*i.e.*, six months—and the latter lasting from May to July inclusive. While doing hospital practice, however, there are no recognised times for holidays, as the work in the wards goes on all the year round, so it makes the last three years of student-life very full of work indeed.

I will now try to give a general outline, and then later on a more particular one, of the work. In the first two years no hospital-work is done, one's time being quite filled in with college-work. The third year is still devoted to college classes, but now one dovetails in with them junior work at the infirmary—*e.g.*, learning bandaging, accident-dressing, and attending junior clinical medical and surgical classes. At the end of the third year one is supposed to be able to pass the Intermediate examination, and, having done so, one enters upon two years of senior work at the infirmary, dovetailing that work again with classes at the college, asylum, fever-hospital, vaccination-work, and midwifery.

The Work Year by Year.

Now I will try to describe the work as it is done year by year. At the college the lectures were usually one hour in length, but at the infirmary three-quarters of an hour only. Of course there never was more than one lecture on any one particular subject per day, so that four lectures per week in the following account means that on four days of the week a lecture on that particular subject was given. Class-examinations on the subjects lectured on at the college were held periodically, and you were expected to attend them. Moreover, in order to get "signed-up" as having attended those lectures one has to put in 75 per cent. of the possible attendances. If one does not do so then attendance at those lectures has to be repeated the following year, and so one is thrown back a year in the work.

Dissecting was done at no specified time. The dissecting-theatre was open all day long, from ten till five, and so that work is fitted in with other classes. All parts of the human body have to be dissected, and the time spent on this work has to extend over at least two winter sessions. One can start work either in a summer or winter session. I commenced in a summer session, as I did not want to lose time, but I think the winter session is on the whole the more suitable time to begin. The following is a detailed account of classes, &c., that I attended:

Summer Session, First Year.

Materia medica, four lectures per week.

Practical pharmacy, one hour per week.

Practical chemistry, twice a week, two hours each time.

Winter Session, First Year.

Dissecting.

Anatomy, five lectures per week.

Anatomy demonstrations, twice a week.

Chemistry, five lectures per week.

Biology, three lectures per week.

Practical biology—*i.e.*, dissection of the earthworm, frog, dogfish, rabbit, &c. One class per week of three hours' duration.

Summer Session, Second Year.

Dissecting.

Practical histology, three times per week, 2½ hours each time.

Practical surgery, two lectures per week.

Winter Session, Second Year.

Dissecting.

Anatomy, five lectures per week.

Anatomy, demonstrations three times a week.

Physiology, five lectures per week.

Practical physiology, one hour per week for three months.

Operative surgery, one hour per week for three months.

Summer Session, Third Year.

Anatomy demonstrations, twice a week.

Pharmacology and therapeutics, four lectures per week.

Practical morbid histology, twice a week, two hours each time.

Winter Session, Third Year.

Dissecting, three months.

Anatomy demonstrations, twice a week for three months.

Medicine, three lectures per week.

Systematic surgery, three lectures per week.

Pathology and morbid anatomy, five lectures per week.

Dietetics and general therapeutics, one lecture per week.

Summer Session, Fourth Year.

Obstetrics, four lectures per week.

Forensic medicine, three lectures per week.

Public health, two lectures per week.

Ophthalmology, two lectures per week.

Winter Session, Fourth Year.

Medicine, three lectures per week.

Gynæcology, two lectures per week.

Vaccination, a lecture and practical vaccination class once a week for three months.

Obstetric demonstrations, twice a week.

Infectious diseases.—Attendance at a fever-hospital once a week for three months.

Summer Session, Fifth Year.

Mental diseases.—This class was given twice a week at an asylum, cases demonstrating the lectures being shown.

Diseases of children.—Two lectures a week and attendance at a children's hospital twice a week.

Skin-diseases.—A lecture and demonstration once a week at a skin-hospital.

Diseases of larynx.—A lecture and demonstration once a week at a throat-hospital.

Diseases of the ear, heart, respiratory organs.—Lectures on each of these and on tropical diseases once a week.

Winter Session, Fifth Year.

Pathology and morbid anatomy demonstrations, twice a week.

Walking the Hospital.

The hospital-work was taken out at the Royal Infirmary. As I have pointed out, some junior work is done during the third year, and then during the fourth and fifth years, after passing the Intermediate examination, senior work is done every morning of the week, except Sunday, all the year round. For six months each student acts as a "dresser" in the surgical wards, where a certain number of beds are allotted to him. With the help of one of the nurses, and under the direction of a house-surgeon, the student does all the dressings required each morning for the patients in those beds. He attends any operations performed on those patients, and if necessary renders any minor aid required during the operation, such as attending to the instruments, seeing they are ready to hand to the surgeon, threading suture-needles, &c. He also takes full notes about the patients under his charge, their history, ailment, and description of any operation performed on them. For another six months the student acts as a clerk in the medical wards, where again he has a certain number of beds under his charge. His duty is to take full notes of each case day by day, and to be ready to give the physician any particulars he may require when he comes to see the cases. Then he has to do *post-mortem* work for three months, act as senior accident-dresser for three months, act as clerk for three months in the gynæcology wards, and attend the gynæcological operations; also attend the eye, ear, and throat departments. Then finally he attends for the rest of his time in the medical and surgical out-patient departments and presides at not fewer than twenty labour-cases. During these two years he dovetails in attendance at medical and surgical clinical lectures and ward classes.

The Cost.

Finally I come to the cost in cash, and give my own figures. As I lived outside Manchester there were railway and tram fares and luncheons to pay for. In fact, I counted as cost any expense incurred from leaving home in the morning till my return at night. One item I have not included, and that is the extra cost in clothes, which certainly was a fairly large one; but against that can be put as material assets a fine microscope, a good set of bones, and a number of expensive books. I took out six months' extra dissecting, anatomy, and pathology demonstrations at a cost of about 10*l*., and I also had some coaching in physiology and anatomy, for which I paid 10*l*. 10*s*., extras which, of course, many students do not require:

Expenses over Preliminary examination ...	£5	3	0
Microscope (net)	11	2	0
Food	80	8	8
Travelling-expenses (Manchester)	47	12	5
Books and instruments	19	6	9
Tips and subscriptions	5	15	6
Bones	6	10	0
Travelling and hotel expenses (London) ...	29	5	8
"Coaching"	10	10	0
Fees (college, infirmary, and examination) ...	157	1	6
Expenses in taking out midwifery cases ...	4	4	10
Unclassified sundries, as pencils, note-books, glass slides, boxes, &c.	2	10	8
	£379	11	0

CHOICE OF QUALIFICATIONS.

There are now in the United Kingdom nineteen distinct portals through which medical students may enter for qualification, the Universities of Leeds and Liverpool having during the past year, as former constituent members of the Victoria University, been empowered to grant degrees in medicine, making fourteen of the portals. The other five are those of corporate bodies who grant diplomas to students.

As to Degrees.

The first point to note is that all Universities require students proceeding to their medical degrees to pass the Preliminary examination peculiar to each University or (in some cases) its equivalent, and to pursue professional studies therein during a part at least of the curriculum. The London University and the Royal University of Ireland are exceptions on the latter point. The degrees granted and sufficing for registration as a medical practitioner are—bachelor of medicine and bachelor (or master) of surgery, which carry with them the courtesy title of doctor. In the subjoined notes we refer solely to the bachelorates.

Aberdeen.—The regulations in this and the other three Universities in Scotland are identical. See *Edinburgh* for particulars.

Birmingham.—The Matriculation examination of the University in G.M.C. subjects must be passed, or its equivalent (*e.g.*, that of any other University, or College of Preceptors' first class). The examination will be held on September 12, 1904, June 5 and September 11, 1905. Fee, 2*l*. Four of the five years' curriculum must be spent in the University, but the Senate have power to recognise attendance at another University, and to recognise such University examinations in chemistry, physics, and comparative anatomy. Five professional examinations. Fees, 16*l*. Dean, Professor Windle.

Cambridge.—The student must matriculate at and reside in the University nine terms, also pass (or obtain exemption from) the Previous examination, and three professional examinations, and keep an Act—*i.e.*, read a thesis composed by himself, upon which he may be examined. The arrangements enable Cambridge medical students to take the greater part of the curriculum in London. The Cambridge University Press publishes a "Students' Handbook," which is a useful compendium of information. There are four professional examinations. Fees, 25*l*. Secretary, Professor R. Howden, College of Medicine, Newcastle-on-Tyne.

Dublin.—Students must be B.A.s of this University or of Oxford or Cambridge, and spend five years in professional studies.

Durham.—Students must pass the Registration examination in English, English history, geography, Latin, arithmetic, algebra, Euclid, and Greek or French or German. The examination is to be held on September 27, 1904, March 28 and September 26, 1905. Eight other examinations are recognised in lieu of this. Fee, 1*l*. 10*s*. Secretary, the Rev. H. Ellershaw, North Bailey, Durham. Of the five years' curriculum one year must be spent at the Durham College of Medicine, Newcastle-on-Tyne, and the others in approved institutions.

Edinburgh.—The following information also applies to the Universities of Aberdeen, Glasgow, and St. Andrews. A Preliminary examination is required to be passed before entering, the subjects being (1) English, (2) Latin, (3) elementary mathematics, (4) Greek, or French, or German. In the case of a candidate whose native language is not English, an examination in his own native language may be substituted for French or German, and an examination in any other classical language for one in Latin or Greek. Examinations are held in March and September. Fee, 10*s*. 6*d*., payable to Mr. T. Gilbert, the University, Edinburgh. Certain examinations are accepted in lieu of this examination. Of the five years' curriculum two years must be spent at the University, and the remaining three at some other recognised school. Of the sixteen professional subjects at least eight must be taken at the University, or in some recognised University. There are four professional examinations. Total fees, 23*l*. 2*s*. Dean, Professor A. R. Simpson, the University, Edinburgh.

Glasgow.—Conditions as in Edinburgh University (*q.v.*). Address for matriculation, Mr. W. Innes Anderson, Matriculation Office, the University, Glasgow, and women students to Miss Galloway, Queen Margaret College, Glasgow. As to professional studies, address Professor Murdoch Cameron, the University, Glasgow.

Leeds.—Conditions are the same as at Victoria University (*q.v.*). Inquiries should be addressed to the Dean, Dr. de B. Birch, Yorkshire College, Leeds.

Liverpool.—A special matriculation pamphlet is obtainable from the Registrar, University of Liverpool. This examination or its equivalent has to be passed, and otherwise the conditions for graduation are the same as the Victoria University. Dean, Professor B. Moore, the University, Liverpool.

London.—Candidates must pass the Matriculation examination (see "Science") or be exempted as graduates of Universities approved by the Senate. Women who have obtained the Cambridge Tripos certificate, or that of the Oxford Second Public examination or honours in the Oxford University Examination for Women in modern languages, are also exempt. The higher or honours grade of the Scotch School Leaving certificate also gives exemption from the Matriculation examination. The University, in common with the Royal Colleges of Physicians and Surgeons, does not require its matriculated medical students to register as such at the General Medical Council. There are two classes of students, *internal* and *external*, the former comprising those who have matriculated and attended any one "Approved course of instruction" in a school or under any one recognised teacher of the University. There are three professional examinations. The first of these is the Preliminary Scientific, which cannot be taken until nine months after matriculation. The subjects are inorganic chemistry, physics, and biology. Fee, 5*l*. Subsequently students must pass an examination in organic chemistry at least a year before the Intermediate examination. No additional fee. All candidates have to produce evidence of class and laboratory study as specified in the regulations to be obtained free from the External Registrar, University of London, South Kensington, London, S.W. Two years after passing the Preliminary Scientific examination the candidate may enter for the Intermediate examination in medicine (fee 10*l*.), and two academic years thereafter the M.B., B.S. examination (fee 10*l*.).

Oxford.—The degrees are granted only to those who have taken the B.A. degree. There are a Preliminary and two professional examinations, and a certain portion of the curriculum must be taken at the Oxford Medical School.

Royal University of Ireland.—Candidates must pass the Matriculation and First University examinations. The Matriculation is held in the summer and autumn at various centres. Fee, 1*l*. The subjects are Latin, English, mathematics, natural philosophy, and a modern or classic language. The "First" examination is in the same subjects, but cannot be taken until a year after the Matriculation. Fee 1*l*. Three professional examinations have also to be passed. Fees 1*l*. each. The University recognises most of the medical and science schools in the United Kingdom for the requisite instruction. Address, The Registrar, R.U.I., Dublin.

St. Andrews.—Conditions the same as in Edinburgh University (*q.v.*).

Victoria.—The Matriculation examination or its equivalent has to be passed. It is held in June, July, and September each year by the Joint Matriculation Board (representing Leeds, Liverpool, and Manchester) in the following subjects: (1) English Language or Literature, and English History; (2) Mathematics; (3) Three of the following, one of which must be a language: Greek, Latin, French, German, some other modern language approved by the Board, elementary mechanics, chemistry, geography or natural history. Fee 2*l*., payable to the Secretary, The Joint Matriculation Board, Owens College, Manchester. Arts graduates are exempt from the examination, also any who have matriculated at the London University and those who have the Higher Local Oxford and Cambridge certificates and the Senior Locals in honours. At least two years of the five years' curriculum must be passed in a college of the University. There are three professional examinations, the arrangements being similar to those for the London University degrees. Fees 15*l.* Dean, Professor W. Stirling, Owens College, Manchester.

MEDICAL DIPLOMAS.

Some of the Universities (*e.g.*, Durham) grant diplomas in medicine, surgery, and midwifery distinct from their degrees. These are not dealt with here.

Royal English Colleges.—The familiar title L.R.C.P.L. and M.R.C.S.E. is granted to men only by the Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England. Candidates must pass a preliminary examination recognised by the Board (substantially those of the G.M.C.), and during the five years' professional curriculum pass three examinations. The first is in physics and chemistry, practical pharmacy (which may be taken at a later stage), and elementary biology. It may be taken in separate parts. The candidate's studies in these subjects need not have been pursued in a medical school. The certificates of other institutions are recognised. Pharmacy may be studied under any medical practitioner or member of the Pharmaceutical Society, or in a public hospital, infirmary, or dispensary. The four years after the first year of the prescribed period must be spent in a medical school. The second examination is in anatomy and physiology, which must be taken together. The third examination is in the branches of medicine, surgery, and midwifery, and may be passed in three parts. Total fees, 42*l.* Address: The Secretary, Examination Hall, Victoria Embankment, London, W.C.

The Apothecary's Licence, commonly called L.S.A., is granted by the Society of Apothecaries, and entitles to registration as a medical practitioner, but does not carry the title "Physician" and "Surgeon" with it. Candidates must be registered medical students and pass two professional examinations, each of which can be taken in parts. Fees, 21*l.* Address: Mr. F. Hayden, Secretary, Court of Examiners, Apothecaries' Hall, Blackfriars, E.C.

Royal Scotch Colleges.—The Scotch triple qual., L.R.C.P.&S.Edin. and L.F.P.S.G., is conferred by the Conjoint Board of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow. Candidates are required to pass the Educational Institute's Preliminary examination or otherwise to be registered as medical students, and to pass three professional examinations—viz., *First* in chemistry and elementary anatomy and histology at the end of the first year (may be taken in two parts). Fee, 5*l.* 5*s.* *Second* in anatomy, physiology, and materia medica and pharmacy, together or separately. Fee, 5*l.* 5*s.* *Final* at the termination of the full period of study, in the rest of the subjects. Open to women. Fee, 15*l.* 15*s.* Addresses: Mr. James Robertson, Solicitor, 54 George Square, Edinburgh, and Mr. Alexander Duncan, B.A., LL.D., Faculty Hall, 242 St. Vincent Street, Glasgow.

Royal Irish Colleges.—The L.R.C.P.I. and L.R.C.S.I. is conferred by the Conjoint Board of the Royal Colleges of Physicians and Surgeons in Ireland. The Board holds a Preliminary examination in the subjects prescribed by the G.M.C. in March, September, and November yearly. Fee, 2*l.* 2*s.* The Board also recognises the examinations on the G.M.C. list. There are four professional examinations—viz., at the ends of the first and second winter sessions and third and fifth years of study. Open to women. Fees, 42*l.* Secretary, Mr. Greenwood Pim, Office of the Royal College of Physicians, Dublin.

Irish Apothecaries' Licence, or L.A.H., is granted by the Supplemented Board of the Apothecaries' Hall in Ireland. Candidates must be registered medical students and must pass four professional examinations. Fees, 22*l.* 1*s.* Address: The Registrar, Apothecaries' Hall, 40 Mary Street, Dublin.

Medical Schools.

We give below a list, with a few particulars, of the schools and colleges recognised by the authorities as proper places of tuition for medical students. Further details may be obtained from the deans or secretaries:

LONDON.

Charing Cross Hospital, The Medical School, Chandos Street, W.C.—Fees, 120*l.* 15*s.*, or 132*l.* 6*s.* in instalments. There is a reduction made to the sons of registered medical practitioners. Dean, Mr. H. F. Waterhouse.

Guy's Hospital, London Bridge, S.E.—Fees, about 160*l.* Has a residential college, in which rooms cost from 11*s.* to 27*s.* per week. Dean, Dr. H. L. Eason.

King's College, Strand, W.C.—Fees for London M.B. curriculum, 148*l.*, or 164*l.* in four instalments. (All students must attend a course of Divinity lectures in the first year, unless exempted.) Dean of the Faculty of Medicine, Professor W. D. Halliburton, M.D.

London Hospital, Mile End, E.—Fees, 126*l.*, or 136*l.* 10*s.* in instalments (sons of medical men 15*l.* 15*s.* less). Contains 820 beds, and is the largest accident hospital in the world. A new block has been added for better accommodation and more adequate teaching in the various departments. Warden, Mr. Munro Scott, Turner Street, Mile End, E.

London (Royal Free Hospital) School of Medicine for Women, 8 Hunter Street, Brunswick Square, W.C.—Fees, Intermediate and Final M.B. Lond. course, including hospital practice, 135*l.*, or 145*l.* in four instalments. Dean, Miss Cock, M.D.

Middlesex Hospital, Cleveland Street, W.—Fees, about 150*l.* Dean, Mr. J. Murray, F.R.C.S. Residential college, 14*s.* 6*d.* to 17*s.* 6*d.* per week (exclusive of board). Warden, Dr. R. A. Young.

St. Bartholomew's Hospital, West Smithfield, E.C.—Fees, 30 guineas entrance and 30 guineas annually for five years. Has a residence for students. One scholarship of 150*l.*, two of 75*l.*, and one of 50*l.* are offered in science, and there is an exhibition worth 20*l.* in general education. Warden, Mr. W. D. Harmer.

St. George's Hospital, Hyde Park Corner, S.W.—Fees, 150*l.*, or 160*l.* in instalments, with dissecting-room and like charges amounting to 8*l.* 18*s.* 6*d.* per course. Deans, Dr. Arthur Latham and Mr. F. Jaffrey.

St. Mary's Hospital, Cambridge Place, Paddington, W.—Fees for full curriculum, 140*l.*, or 145*l.* in instalments. Dean, Dr. H. A. Caley.

St. Thomas's Hospital, Albert Embankment, S.E.—Fees, consisting of entrance and composition fees, amount to about 120*l.* Prospectus can be obtained from the Medical Secretary, Mr. G. Rendle.

University College, Gower Street, London, W.C.—Faculty of Medicine.—Composite fees for Examining Board and Society of Apothecaries, 168*l.*, for the University of London 173*l.* 5*s.* Dean, Professor Sidney Martin, F.R.S.

Westminster Hospital, Caxton Street, S.W.—Fees, 115*l.* 10*s.*, or 141*l.* 15*s.* in six instalments. Dean of the School, Mr. Paton.

ENGLISH PROVINCES.

Aberystwyth and **Bangor,** as far as the First Professional examination is concerned.

Birmingham.—*University Faculty of Medicine.*—Fees (complete for obtaining the degrees of M.B. and Ch.B.), 154*l.* 19*s.* 6*d.* Dean, Professor Bertram C. A. Windle.

Bristol.—*University College.*—Students can complete in Bristol the entire course of study required for the Medical and Surgical Degrees of the University of London. Fees, 68*l.* 5*s.*, of 57*l.* 15*s.* with extras (in one sum), and hospital 12*l.* 12*s.* (annual) and 21*l.* (perpetual). Dean, Professor E. Markham Skerritt, M.D. Registrar and Secretary, James Rafter.

Cambridge.—*University Medical School.*—Apply to the Registrar, the University Registry, Cambridge.

Cardiff.—*University College.*—Instruction is given for the Preliminary scientific and Intermediate M.B. examinations, Lond., and for the corresponding examinations of other Universities. Fees, 57*l.* 10*s.*, or for Conjoint Board, 41*l.* 10*s.* Apply to Dean, or Registrar.

Leeds.—*University Faculty of Medicine.*—Fees for M.B. Ch.B., and diplomas, 112*l.* 17*s.* 6*d.* Dean, Professor de B. Birch, M.D.

Liverpool.—*University.*—The following is an estimate of the cost of medical education at this University. Composition fees, 211*l.* 15*s.* Dean, Professor Benjamin Moore.

Manchester.—*Owens College.*—Fees for M.B., 128*l.* 5*s.*, exclusive of special courses. Dean, Professor William Stirling, M.D.

Newcastle-on-Tyne.—*Durham College of Medicine.*—Fees, 101*l.* 17*s.*, with some extras. Secretary, Professor Robert Howden.

Oxford has an excellent school of medicine.

Sheffield.—*University College* (Department of Medicine).—Fees, about 110*l.* Dean, Dr. W. T. Cocking, Leopold Street.

SCOTLAND.

Aberdeen.—*University Faculty of Medicine.*—Fees, about 100*l.* Secretary, Mr. Donaldson R. Thom, M.A.

Dundee.—*University College.*—Classes and hospital practice for the degree of M.B. and degree in Public Health. The college is affiliated to St. Andrews University. Secretary, Mr. R. N. Kerr.

Edinburgh.—*University Faculty of Medicine.*—Minimum class and hospital fees, 115*l.* Dean, Professor A. R. Simpson.

School of Medicine of the Royal Colleges.—The minimum cost of the education at this school for the triple qualification, including examination-fees, is 115*l.* Secretary, Mr. R. N. Ramsay, solicitor, 27 Forrest Road, Edinburgh.

Glasgow.—*University Faculty of Medicine.*—Fees about 140*l.* Dean, Professor Murdoch Cameron, M.D.

Anderson's College Medical School, Dumbarton Road.—Fees for Scottish triple, about 70*l.* Communications to Dr. Alex Duncan, Faculty Hall, 242 St. Vincent Street, Glasgow.

Queen Margaret College, Hamilton Drive, Glasgow (Glasgow University School of Medicine for Women).—Fees for M.B., about 110*l.* 5*s.* Hon. Secretary, Miss Galloway.

St. Mungo's College, 86 Castle Street.—Fees for English and Scottish conjoint qualifications, about 65*l.* The Dean, Professor A. Macphail, will supply a detailed syllabus.

St. Andrews University.—*Faculty of Medicine.*—The subjects for the whole of the curriculum are taught. (*See also Dundee.*) Fees, 3*l.* 3*s.* per subject. Secretary and Registrar, Mr. J. E. Williams.

IRELAND.

Belfast.—*Queen's College.*—Fees, about 95*l.* Registrar, Dr. Johnson Symington, F.R.S.

Cork.—*Queen's College.*—Fees (for M.B., R.U.I.), about 85*l.* Registrar, Mr. Alexander Jack, M.A.

Dublin.—*Catholic University Medical School*, Cecilia Street, Dame Street.—Minimum cost of lectures, hospitals, special courses, and examination may be put as follows: Royal University, 160*l.*; Conjoint Colleges, 162*l.*; Apothecaries' Hall, 141*l.*—Registrar, Dr. A. Birmingham.

School of Physic in Ireland (Trinity College).—Fees, 149*l.* 6*s.* 6*d.* Registrar, H. W. Mackintosh, M.A., Trinity College.

Royal College of Surgeons in Ireland.—Schools of surgery, including Carmichael and Ledwich Schools. Total expense of triple qualification 160*l.* 13*s.* The Registrar, St. Stephen's Green, Dublin.

Galway.—*Queen's College.*—Fees, as at Cork. Registrar, Professor Townshend.

The Practice of Dentistry.

THE Dentists Act, 1878, provides for the registration of persons specially qualified to practise as dentists in the United Kingdom, and places in the hands of the General Medical Council the formulating of the scheme of qualification. The Royal Colleges of Surgeons in England, Scotland, and Ireland examine candidates for diplomas. Dental students pass the same Preliminary examination as medical students, and are required to register as students at one or other of the General Medical Council's Offices. Candidates for a diploma are required to produce certificates of having been engaged during four years in professional studies, including three years' instruction in mechanical dentistry from a registered practitioner or in some dental hospital. The curriculum includes, as general medical subjects, chemistry, anatomy, physiology, surgery, medicine, and clinical work; and, as special dental subjects, dental anatomy and histology, dental surgery and pathology, dental mechanics, two years' attendance at a dental hospital and three years' instruction in mechanical dentistry. Registration should not be delayed, as the date of registration determines the commencement of qualifying study The following diplomas can be obtained:

Royal College of Surgeons, England.—Dental Surgery.

Royal College of Surgeons, Edinburgh.—Dental Surgery.

Faculty of Physicians and Surgeons, Glasgow.—Dental surgery.

Royal College of Surgeons, Ireland.—Dentistry.

University of Birmingham.—Bachelor and Master of Dental Surgery.

University of Dublin.—Licentiate and Master of Dental Science.

The Birmingham degree is only granted to those who have obtained a licence in dental surgery.

L.D.S.ENG.

A *Preliminary Science Examination* must be passed, consisting of chemistry and physics. New synopses come into force in March, 1905. The instruction must have been obtained at a recognised institution, and be not less than 180 hours' instruction and laboratory-work in chemistry and 120 hours' instruction and laboratory-work in physics. This may be studied for prior to registration, but is passed after being registered as a dental student. Fee, 3*l.* 3*s.*

The First Professional is in mechanical dentistry and dental metallurgy, and is taken after the three years' training under a competent practitioner, or under the direction of the superintendent of the mechanical department of a recognised dental hospital and a six months' course at a recognised dental school. The training may have been taken before registration. Fee, 2*l.* 2*s.*

The Second Professional comes at the end of the curriculum four years subsequent to the date of registration as a student, and the student must be twenty-one years of age. It is written, practical, and oral. The written examination comprises general anatomy, physiology, pathology, and surgery, dental anatomy and physiology, dental pathology, and dental surgery. The oral comprises the same subjects, and is conducted by the use of preparations, casts, drawings, etc. In the practical portion students are examined in dental caries, and may be required to fill cavities, etc.; their knowledge is also tested with regard to the irregularities of children's teeth. Fee, Part I., 2*l.* 2*s.*; Part II., 3*l.* 3*s.* A further 10*l.* 10*s.* is paid for the diploma. Particulars may be had from Mr. F. G. Hallett, Examination Hall, Victoria Embankment, W.C.

L.D.S.EDIN.

The requirements are similar to those required in England. There are only two examinations, which are taken during the Collegiate curriculum. Anatomy, chemistry, physics, and physiology are included in the first examination, the remaining subjects, such as surgery, medicine, and therapeutics, coming under the second. Fees, 15*l.* 15*s.* Address: Mr. James Robertson, Clerk to the Royal College of Surgeons, 48 George Square, Edinburgh.

L.D.S.GLASG.

The examinations and fees for this are the same as in Edinburgh. Address: Mr. A. Duncan, B.A., 242 St. Vincent Street, Glasgow.

L.D.S.IREL.

For this degree, granted by the Royal College of Surgeons in Ireland, three examinations are required—namely, *Preliminary* (in general education), *Primary Dental*, and *Final Dental*. The conditions and requirements are essentially the same as the preceding. Fees (exclusive of Preliminary), 21*l.* Candidates whose names are on the "Dentists' Register" are granted the diploma *sine curriculo* on passing the Final examination and producing certain certificates as to their practice, skill, moral character, etc. A declaration has also to be made before a magistrate that the applicant has not during the two years preceding the date of the declaration "attracted business as a dentist by advertising or other unbecoming practice."

M.DENT.SC. AND L.DENT.SC.

The University of Dublin grants both a degree and a licence in dental surgery. For the licence students are advised to begin their three-years' course of instruction in dental mechanics before passing the Entrance examination in Trinity College. After having been registered as a student two years' lectures are taken and the *Previous* dental examination passed, and the *Final* at the end of the fourth year. The total fees in order to obtain the licence are 200*l.* 17*s.* The Degree examination includes pathology and bacteriology.

B.D.S. AND M.D.S. BIRMINGHAM.

The University of Birmingham grants the degrees of Bachelor and Master of Dental Surgery. Candidates must pass the Matriculation examination required from medical candidates, they must have a licence in dental surgery from some body legally entitled to grant such, and this licence must have been obtained at least twelve months previous to taking the degree, six months of this time being spent in the dental department of a hospital approved by the University. The candidate must also produce evidence that he has attended the following medical courses as required of medical students at the University, and passed the examinations held in the same for medical and surgical degrees : Chemistry, practical chemistry, physics, comparative anatomy, anatomy, physiology. Also that he has attended courses as follows : One course of lectures on medicine, one on surgery, special courses on the surgery and medicine of the mouth, pathology and bacteriology, dental histology, and comparative anatomy, dental surgery and prosthetic dentistry. The examination deals with the above subjects as far as they relate to dentistry. The M.D.S. degree can be taken by thesis twelve months later. The cost of obtaining the licence of dentistry R.C.S.E and the B.D.S. amounts to 149*l*. 19*s*., but in this estimate no allowance is made for books and instruments.

D.D.S.

This American degree is granted by some universities in the United States. It is not registrable in this country. Those degrees most valued can only be obtained after two years' residence (*i.e.*, two winter sessions) in the case of dentists registered in this country; three years if previously unqualified. The chief value of the degree is that it enables one to obtain practical acquaintance with American dentistry. Formerly certain American degrees were accepted by the General Medical Council, but this is not now the case. The following are the more important dental schools in the United States, but they are not all connected with the universities :

Harvard University. Address, E. H. Smith, 283 Dartmouth Street, Boston, Mass.

Michigan University Dental College. Address, J. Taft, Ann Arbor, Mich.

Baltimore College of Dental Surgery. Address, Dr. M. W. Foster, 9 West Franklin Street, Baltimore, Md.

New York Dental School (University of N.Y.). Address, Dr. C. M. Ford, 218 West 135th Street, New York.

University of Pennsylvania. Address, Dr. E. C. Kirk, Dental Hall, cor. 33rd and Locust Streets, Philadelphia, Pa.

Columbian University. Address, Dr. J. H. Lewis, 1023 Vermont Avenue, N.W. Washington, D.C.

North-Western University Dental School. Address, Dr. W. E. Harper, 146 Franklin Street, Chicago, Ill.

The cost of the curriculum is generally : Matriculation, $5; class-fees each year, $100; dissecting-fee, $10; and diploma-fee, $30; besides books and instruments. Board can be obtained at from $4 to $6 per week in most American cities.

RECOGNISED DENTAL HOSPITALS AND SCHOOLS.

London.

Guy's Hospital Dental Department and School, London Bridge, S.E.—Fees for L.D.S.Eng., 110*l*. (or 115*l*. 10*s*. in two instalments), payable on entrance. Dean, Dr. J. Fawcett.

National Dental Hospital and College, Great Portland Street, W.—The well-appointed bacteriological laboratory offers unusual facilities. Fees for complete curriculum, 40*l*. in one payment. Registered dental students can receive the three-years' mechanical training in the laboratory under the best possible conditions, the fee being 50*l*. each year in advance. Dean, Mr. Sidney Spokes.

Royal Dental Hospital of London, Leicester Square, W.C.—Fees for dental part of curriculum, 56*l*. 6*s*., in instalments 58*l*. 16*s*. Single courses may be taken. Dean, Mr. Morton Smale.

St. Thomas's Hospital Dental Department.—Similar fees to those payable at Guy's.

Westminster Hospital Dental Department.—Similar fees to those payable at Guy's.

Provincial.

Birmingham.—University Dental Department and Dental Hospital.

Bristol.—Medical School, Royal Infirmary, and General Hospital.

Dublin.—School of Dentistry and Dental Hospital, Lincoln Place.

Edinburgh.—Dental Hospital and School, 31 Chambers Street.

Exeter.—Dental Hospital.

Glasgow.—Dental Hospital and School, 5 St. Vincent Street.

Liverpool.—University Dental Department and Dental Hospital.

Manchester.—University Dental Department and Victoria Dental Hospital.

Newcastle-on-Tyne.—Royal Infirmary and Dental Hospital.

Sheffield.—University College Dental Department.

The Practice of Veterinary Surgery.

THE veterinary profession is of very humble origin, but in 1844 a charter was granted to the Royal College of Veterinary Surgeons (10 Red Lion Square, W.C.), which states that the "veterinary art as practised by the members . . . shall be henceforth deemed and taken to be and recognised as a profession." In 1881 the Veterinary Surgeons Act was passed, which placed with the College the power of granting veterinary diplomas, and protected the title. The Act, however, gives no monopoly of veterinary practice, and it has been decided by the High Court that a chemist may use the title "veterinary chemist."

The regulations made by the Royal College of Veterinary Surgeons require the candidate to pass (1) the Preliminary examination recognised by the General Medical Council, or (2) the Veterinary Preliminary examination of the Educational Institute of Scotland. The latter examination is held in London, Edinburgh, Glasgow, and Dublin simultaneously, three times in the year, and comprises Latin, mathematics, English, and either Greek, French, German, Italian, or any modern language, and logic. Particulars from Mr. S. M. Murray, 40 Princes Street, Edinburgh. The candidate must next study at a recognised veterinary school for four years, during which time he must (3) pass four professional examinations as follows :

Examination A.—Anatomy of domesticated animals; bones, ligaments, joints. Chemistry and elementary physics. Biology; elementary zoology and botany.

Examination B.—Anatomy of domesticated animals. Histology and physiology. Stable management and manipulation of domesticated animals. Principles of shoeing.

Examination C.—Morbid anatomy, pathology, and bacteriology. Materia medica, pharmacy, therapeutics, and toxicology. Veterinary hygiene and dietetics.

Examination D.—Principles and practice of veterinary medicine and surgery. Clinical medicine, surgery, and obstetrics (horse and other domesticated animals). Meat-inspection.

The candidate must be twenty-one years of age when entering for D.

The examinations are conducted by a Board of Examiners, which visits Edinburgh, Glasgow, Dublin, and London towards the end of the College terms (May and December). A fee of 5*l*. for each examination has to be paid to the Royal College at a specified date before the examination, and after the fourth is passed 1*l*. is paid for registration.

The following are the institutions which instruct students for the examinations. It should be noted that the Royal College of Veterinary Surgeons is the examining and not a teaching body.

Royal Veterinary College (founded 1791 ; incorporated 1875), Great College Street, Camden Town, London, N.W.—Educational fee, 80*l*., paid in four instalments, and 2*l*. 12*s*. 6*d*. library fees. There are also fees for occasional students as follows : Anatomy, 8*l*. 8*s*. ; botany, 3*l*. 3*s*. ; chemistry, 5*l*. 5*s*. ; pathology, 5*l*. 5*s*. ; physiology, 5*l*. 5*s*. ; practical chemistry, 3*l*. 3*s*. ; practical histology, 3*l*. 3*s*. ; practical pathology, 5*l*. 5*s*. ; surgery, 5*l*. 5*s*. ; and veterinary medicine, 5*l*. 5*s*. Principal and Dean, Professor John McFadyean, M.R.C.V.S. Secretary, Mr. R. A. N. Powys.

Royal (Dick) Veterinary College (founded 1823), Clyde Street, Edinburgh.—Matriculation and class fees, 58*l*. 16*s*., in four payments. The Carnegie Trust pays students' fees at this College if the conditions laid down by the Trustees are fulfilled. It should be noted, however, that the Educational Institute examination is not accepted by the Trustees. Principal, Professor J. R. U. Dewar, F.R.C.V.S.

The New Veterinary College, Edinburgh.—This College has recently become the Veterinary Department of the University of Liverpool, to which it will be transferred, the Principal (Professor Owen Williams) being retained.

Glasgow Veterinary College (established and incorporated 1863), Buccleuch Street, Garnethill, Glasgow.—Fee, 60*l.*, or 63*l.* in instalments. The Carnegie Trust pays the fees of students who fulfil the conditions. Principal, Professor J. McCall, F.R.C.V.S.

Royal Veterinary College of Ireland, Pembroke and Shelbourne Roads, Dublin.—Fees, 21*l.* a session, with 1*l.* 1*s.* entrance-fee. The new illustrated prospectus gives a capital idea of the arrangements at this the newest of the Veterinary Colleges. Principal, Professor A. E. Mettam, B.Sc.

Holders of the diploma M.R.C.V.S. who have been a certain time in practice may obtain by thesis the title of F.R.C.V.S. Army veterinary appointments are open for competition: commencing salary is 250*l.* a year, with rank of lieutenant, increasing by advancement to 850*l.*—the salary of the principal veterinary surgeon, who holds rank as colonel.

The curriculum fees amount to 100*l.* at the least, and these do not include any adventitious aids, such as private-coaches' classes. In addition to the college-fee, a student will need for microscope, dissecting-instruments, and books, say, another 50*l.*; allowance should also be made for illness and for failure at one or more of the examinations, which will entail a prolongation of the time during which the student is not in a position to earn anything.

Principles and Practice of Science.

THE oldest living Past-President of the Chemical Society to-day is Sir Henry Roscoe. He graduated as B.A. from the University College, London, more than half a century ago, but so rudimentary was scientific teaching in London at that time that he had to go to Heidelberg for his training as a chemist, and at the University there he graduated as Ph.D. in 1853. This was the usual thing fifty years ago, and it obtained until recent years, but now every university in the United Kingdom has its Faculty of Science, and the opportunities for efficient instruction are excellent. We are still weak in outlets for science graduates, because the leaders of our staple industries have been trained in traditional methods, and are slow to call in the services of theorists (as they are apt to call scientific men); but the example now set by the most progressive manufacturers is being followed slowly by others, and there is a prospect that ere long in every industry the methods of science will be adapted to the production of commodities, and this necessarily implies the employment of men with special knowledge of these scientific methods. We have evidence of this in the curricula at various colleges. Sheffield trains men in metallurgical science, Leeds in textiles and dyes, Glasgow in marine science, and so on, the object of each being to specialise in the requirements of local industries. Educationists are not of one mind as to the wisdom of this course, which is thoroughly British in its utilitarianism. Many say the best men are those who are trained in scientific methods irrespective of their special application, but all the Universities grant degrees in departments, and this year Aberdeen and Victoria Universities have arranged to grant science degrees in the department of pharmacy.

SCIENCE DEGREES.

It is impossible in the space at our disposal to describe in detail the arrangements at each University, but we treat each generally, and more specifically refer to those of

The University of London.

This reconstituted body has obtained wide powers for the establishment of departmental degrees, and Pharmaceutics is one which may yet be formulated. In the meantime there are three departments—viz., the Faculty of Science, the Faculty of Engineering, and the Faculty of Economics and Political Science (including Commerce and Industry). The first step to each is

THE MATRICULATION EXAMINATION.

As mentioned under Medical Degrees, there are certain exemptions to this examination (see page 282). There are two types of the examination—one with Latin, and one without. The latter is now generally taken by science students. If Latin is not taken, another language apart from English must be included. The following are the subjects:

(1) *English.*—One paper of three hours.

(2) *Elementary Mathematics.*—Two papers of three hours each.

(3) *Latin,* or *Elementary Mechanics,* or *Elementary Physics*—Heat, light, and sound, or *Elementary Chemistry,* or *Elementary Botany.*—One paper of three hours in each subject.

(4) and (5). Two of the following subjects, neither of which has already been taken under Section (3). One paper of three hours in each subject. If Latin be not taken, one of the other subjects selected must be another Language from the list, either ancient or modern: Latin, Greek, French, German, Arabic, Sanskrit, Spanish, Portuguese, Italian, Hebrew, Ancient history, Modern history, Logic, Physical and general geography, Geometrical and mechanical drawing, Mathematics (more advanced), Elementary mechanics, Elementary chemistry, Elementary physics (heat, light, and sound), Elementary physics (electricity and magnetism), Elementary biology (botany), and Elementary biology (zoology).

For this candidates must be sixteen years of age. There is ample choice here, but the whole five subjects must be passed at one time. The examination is held in January, June, and September each year in London and provincial centres. It lasts four to five days. Fee, 2*l.* Full details about the subjects and conditions of entry are given in "Regulations for Matriculation," which can be obtained on application to the Principal, University of London, South Kensington, S.W.

THE INTERMEDIATE EXAMINATION IN SCIENCE

is the next step, and it cannot be taken until a year after passing the Matriculation examination. Here, again, there is a choice of subjects—viz., four out of the following seven: *For a pass,* pure mathematics, mechanics, experimental physics, chemistry, botany, zoology, and geology. *For Honours* any one or more of the following: pure mathematics and mechanics, experimental physics, chemistry, botany, zoology.

The examination is held in July, and the fee is 5*l.* Particulars will be found in "Regulations relating to Degrees in Science," to be obtained on application to the External Registrar, the University of London, South Kensington, London, S.W.

Two courses are now open to the student. A year after the Intermediate and at least three years after matriculating he may enter for

THE B.SC. EXAMINATION,

selecting three out of ten prescribed subjects, which are: Pure mathematics, mixed mathematics, experimental physics, chemistry, botany, zoology, animal physiology, geology, and physical geography, psychology, and logic and methodology. This may be taken for pass or honours. The examination is held in September yearly, and the fee is 5*l.*

The second method of getting the degree is new—viz., *the B.Sc. Degree by Research.* In this case the student must be nineteen, and he cannot enter until after passing the Intermediate, and two years before he proposes to proceed to the degree he must notify the University authorities of his intention to submit a thesis on the research which he is to undertake. His proposal must be approved by the Board of Studies, who consider his fitness to do the work. If approved the research student must for two years carry on his research in a school or schools or under a teacher or teachers of the University, if he be an internal student, or, if he be an external student, at some institution approved by the Senate. Other formalities have to be adhered to, all of which are detailed in the "Regulations."

The D.Sc. Degree is granted on a similar principle to that just detailed, two years after the B.Sc. has been taken. In addition to submitting a thesis, candidates for the degree are expected to be so fully conversant with the branch of science they profess as to be able, if required, to satisfy any test of their acquirements in that branch that it may be thought expedient to apply.

B.SC. (ENGINEERING).

It will suffice to say in regard to this that the Intermediate examination is in the following five subjects: (1) Mathematics; (2) mechanics; (3) either electricity and magnetism, or heat, with either sound or optics; (4) engineering drawing and design; (5) one of the following subjects: either heat with either sound or optics, or electricity and magnetism [if not taken under (3)]; chemistry; geology.

The Final examination is also in five subjects, viz:

Group A (three only to be taken): Theory of machines and machine-design; theory of structures and structural design; strength and elasticity of materials; electrical technology.

Group B (at least two to be taken): Hydraulics; surveying; theory of heat-engines; design of electrical machinery and apparatus; generation, transmission, and distribution of electrical energy; mathematics; advanced theory of machines and structures.

D.Sc. is also granted in this department.

Other University Degrees.

Birmingham University grants the B.Sc. degree in (1) pure science and (2) applied science, the latter in civil engineering or mechanical engineering. Candidates for any of these must pass the Matriculation examination held in June and September yearly. The subjects are:

(1) English History and Literature.
(2) and (3) Any two Languages out of the following: Latin, Greek, French, German, Italian, and Spanish.
(4) Mathematics.
(5) One Science subject chosen from the following: Mechanics, Chemistry, Physiography, Botany, Animal Biology.

Candidates for degrees in engineering are required to take mechanics as the science subject, and they may take higher mathematics instead of one of the languages (2) and (3), but candidates for the degree in pure science must take French *and* German either when matriculating or subsequently before being admitted to the degree. Fee 2*l.* A few examinations are recognised in lieu of this one. Students must put in three sessions of study at the Birmingham University, the curriculum extends over three years, and there are Intermediate and Final examinations to pass. Fees 8*l.* The M.Sc. degree is granted on examination after one more academic year of study, and D.Sc. two years after the B.Sc. on the result of an original research. Dean, Professor J. H. Poynting, at the University.

Edinburgh University.—B.Sc. is granted in pure and applied science (engineering, public health, and agriculture). Candidates must pass the Preliminary examination in English and another language, mathematics, and dynamics, or a third language. The examination is to be held on September 16, 1904, and March 3, 1905, in Edinburgh. Fee 10*s.* 6*d.* A degree in arts exempts from it. The curriculum for the degree lasts for three academical years, including seven courses of instruction, of which at least four courses must be taken at the Edinburgh University and the others there or at an approved institution. There are two science examinations. Fees 6*l.* 6*s.* D.Sc. is granted five years after the B.Sc. by professing one subject, or on the basis of research. Fee 10*l.* 10*s.* Dean, Professor Geikie, at the University.

Royal University of Ireland.—Candidates may present themselves for the B.Sc. degree examination one academical year after graduating in any Faculty in the University—*e.g.*, as B.A. They may select any one of the following groups of subjects: Mathematics and mathematical physics; mathematical physics and experimental physics; experimental physics and chemistry; chemistry and geology; geology, botany, and zoology; biology (including botany, zoology, and physiology). Fee 1*l.*

Victoria University.—The arrangements fer B.Sc. here also apply to Leeds and Liverpool. Candidates for B.Sc. must pass the Preliminary examination and study three years in prescribed subjects, part of the time being at a college of the University. There are two ways of proceeding to the degree. In the first the student matriculates at the University, then devotes the first year to the subjects of the Preliminary examination (particulars of which are given under Medical), and passes the examination. In the second year the subjects of the Intermediate examination are studied and the examination passed, and in the third year the subjects for the Final examination, which is also passed. This course is best for those who are proceeding to the degree straight from school. Others who pass the Preliminary examination before matriculating are allowed to take the Final examination at the end of the second year of study, but are not permitted to proceed to the degree until they have undertaken, in a college of the University, a further year of study approved by the Board of Studies. The degree of B.Sc. with Honours is granted in the following schools: Mathematics; engineering; physics; chemistry; zoology; physiology; geology, mineralogy, and palæontology; botany; pharmacy. The degree of M.Sc. is granted to graduates later. Address the Secretary, Mr. Edward Fiddes, Owens College, Manchester.

B.Sc. in Pharmacy.—This degree may conveniently be mentioned here. The Victoria University has arranged to grant a degree in science in the school of pharmacy, the examination being for a pass or honours. Students must pass the Preliminary examination and matriculate. The first year they attend at the University courses of instruction in chemistry, physics, botany, and in the pharmaceutical laboratory; in the second year chemistry, botany, and materia medica are studied; and in the third year courses in chemistry and two of the following: Physics, history of chemistry, electro-chemistry, pharmacology, bacteriology, toxicology, and analysis of foods and drugs. There are two professional examinations. The Intermediate, in physics, chemistry, botany, and practical pharmacy, is held at the end of the first year's study. The Final examination is in chemistry and two of the other subjects of the second and third years' work. The degree is granted independent of qualification under the Pharmacy Acts, but the nature of the curriculum is such that it prepares students for the Minor and Major examinations.

The Aberdeen University's Degree is B.Sc. in pharmacy. Arrangements for it are complete, but the ordinance has not yet been laid before Parliament. It is simply a departmental degree in science, and the primary advantage of it to students of pharmacy in Scotland is that they must matriculate at the University after passing the Preliminary examination (see Edinburgh University above), so that they become eligible to have their fees paid by the Carnegie Trust. The conditions of study, as to period and attendance at the university and other courses, are the same as for B.Sc. Edin. The First professional examination is also the same as the First examination in pure science, the subjects being mathematics or biology; natural philosophy (with the addition of a practical test in optics); and chemistry. The Final examination is taken at the end of the three years' curriculum, which includes practical experience in the operations of pharmacy. The subjects of the examination are chemistry, botany, materia medica, and pharmacy, in all of which students must have had recognised courses of study.

QUALIFICATIONS IN CHEMISTRY.

The pursuit of chemistry as a profession is now regulated on similar lines to those of pharmacy, without, however, statutory enforcement. Every university college in the country has a course of study for those seeking a diploma and training in chemical science. One of the oldest and most thorough courses is that at the City and Guilds Central Technical College, Exhibition Road, London, S.W., one of the best-equipped science schools in the world. It is a school of the London University, and it is advisable for those who enter upon the course for the college diploma to pass the University Matriculation examination, otherwise they must pass the College examination in mathematics, mechanics, one language, and mechanical drawing, or physics or chemistry. The curriculum of study is as follows:

Central Technical College.

First Year.—Daily lectures and practice in chemistry, physics, mathematics, engineering drawing and workshop, and mechanics.

Second Year.—Daily lectures and practice in chemistry, crystallography, engineering, and engineering design.

Third Year.—Chemical-laboratory work, civil engineering and mechanical or electrical engineering, crystallography and physical chemistry, workshop bookkeeping and accounts, and, if desirable, mathematics.

The Finsbury Technical College, Leonard Street, London, E.C., is under the same auspices, but the nominal course is two years, being intended for works-managers, although a third year may be taken. The conditions of entry are similar, the Entrance examination being in mathematics and English. Many of our leading young chemists have taken the first two years of their curriculum at this College, and the third at Exhibition Road.

A.I.C. and F.I.C.

This outline shows fairly what the course of a professional chemist's education is. It is further illustrated by the examinations of the Institute of Chemistry, 30 Bloomsbury Square, London, W.C., a chartered body whose certificate as Fellow is necessary for the appointment of public analyst. No doubt in time the Institute will obtain statutory powers under which the title "analytical chemist" or similar titles may only be used by persons certified to be qualified. That is the direction in which it is moving. To get the diploma of the Institute one must first register as a student at the age of seventeen or later, after passing an examination such as the Medical Preliminary (*q.v.*, the certificates recognised by the G.M.C. being also recognised by the Institute). At the time of registration the student must be at one of the universities, colleges, or schools approved by the Council, or a pupil of a Fellow of the Institute. Fee 5*s*. There are Intermediate and Final examinations for the Associateship (A.I.C.), the fellowship being granted later without further examination. There are two courses of study open to the student: one takes three years (entirely collegiate), and the other four years (half collegiate and half with a F.I.C.). Those who have a degree in science are admitted to the Intermediate examination without requiring to prove these formalities.

The curriculum must include theoretical and practical chemistry and physics, mathematics, and one of the following: advanced mathematics, mechanics and chemical engineering, metallurgy, geology and mineralogy, physiology, and bacteriology. The Intermediate examination may be taken at the end of the curriculum. It requires a thorough acquaintance with the fundamental laws of chemistry; with the methods of preparation of the more important elements and compounds, both inorganic and organic; with the principles of chemical classification, and the current theories of chemical science. Particulars of the examination and papers given at the last two examinations will be found in the "Regulations" (1*s*.). Certain persons are exempt from the examination if they produce satisfactory evidence of having been trained in theoretical and practical chemistry, in theoretical and practical physics, and in one optional scientific subject. Among these we note those holding:

B.Sc., Edinburgh.—Final examination, with special distinction in chemistry. (The same for B.Sc. of the other Scotch Universities.)

B.Sc., London.—Final examination, with First or Second Class Honours in chemistry. (The same for Victoria.)

The fee for the examination (which occupies at least four days) is 5*l*. 5*s*. The Final examination also occupies at least four days, and those who have passed the Intermediate may enter for it. Fee 5*l*. 5*s*. The Examiners are at liberty to apply any test which they think desirable either *vivâ voce*, or by writing, or by experimental work, in order to obtain evidence as to the knowledge of theoretical and practical chemistry possessed by the candidate, who is required to show a thorough acquaintance with at least one of the following branches of chemistry, to be selected by himself: (*a*) mineral chemistry; (*b*) metallurgical chemistry; (*c*) physical chemistry; (*d*) organic chemistry; (*e*) analysis of food and drugs and of water; (*f*) biological chemistry. Candidates in Section (*e*) are required to show a general knowledge of the therapeutic effects of chemicals and drugs, and of the quantities which, taken internally, would be injurious or fatal to man. This section is the one which those who wish to become public analysts should take. It is required by the Local Government Board.

For admission to the Fellowship, an Associate is required to have been registered for three years, and to have been continuously engaged during that period in the study and practical work of applied chemistry in a manner satisfactory to the Council. Fee 5*l*. 5*s*. Fellows and Associates also pay an annual subscription of 1*l*. 1*s*.

The "Regulations" is published by Messrs. Blundell, Taylor & Co., 173 Upper Thames Street, London, E.C., price 1*s*. Registrar of the Institute, Mr. R. B. Pilcher, 30 Bloomsbury Square, London, W.C.

GOVERNMENT SCIENCE EDUCATION.

The Chancellor of the Exchequer recently reminded a deputation of professors, who wanted more money for higher education, that this country spends more per head on education than any other in the world. It is on elementary and secondary education chiefly that this money goes, but higher education in science is not altogether neglected, as the Royal Colleges of Science in London and Dublin are wholly maintained by the Government, and grants are made to various universities. The Board of Education, South Kensington, London, S.W., is charged with establishing, conducting, and inspecting schools and classes which earn grants for science and art education, and thus regulates the education of the country in a sense. Science schools and classes are situated in every fair-sized town of the Kingdom, and are an excellent means of getting a foundation of scientific knowledge. Among the subjects taught, and in which examinations are held, are the following:

Agricultural science
Applied mechanics
Botany
Building-construction
Chemistry (inorganic and organic)
General biology
Geology
Geometry
Human physiology
Hygiene
Machine-construction
Magnetism and electricity
Mathematics
Metallurgy
Mineralogy
Naval architecture
Physiography
Rural economy
Sound, light, and heat
Steam
Theoretical mechanics (solids and fluids)
Zoology

Examinations in all these subjects are held yearly. To students who attend twenty-five lessons and pass an examination a certificate is awarded, book-prizes being added in the advanced stages, and bronze medals in the honours stages. Besides, the following scholarships are awarded annually to the best students in each of certain groups.

Royal Exhibitions (awarded to those who also obtain a success in advanced practical mathematics, or in the second or some higher stage, or a pass in honours).—50*l*. a year, and free admission to lectures and laboratories and instruction during the three years necessary for completing the Associateship course in the Royal College of Science, London, or the Royal College of Science, Dublin. Seven open each year.

National Scholarships.—25*s*. a week for the session of about forty weeks each year, and free admission for three years necessary to either of the above colleges. Twenty-one open each year.

Free Studentships.—Free admission for three years to the Royal College in London. Six open each year.

Courses of Instruction.

Certain railway fares are also paid. Local teachers will give students further information, but the particulars are detailed in the official Directory for conducting schools and classes in connection with the Board of Education, Part I., 2*d*.; Part II. (giving schedules of subjects), 4*d*., which may be obtained from the official publishers. The Royal College of Science, London, will ere long be housed in the best-equipped school in the country; for a description of it see the *C. & D.*, February 20, 1904. Professor W. A. Tilden, F.R.S., the head of the chemical department, is a pharmaceutical chemist. It is here that Excise and Customs officers are trained for posts in the Government laboratories and elsewhere in the services as chemists. These, with the King's scholars, occupy most of the places in the college, but a few private pupils are taken. The courses of instruction are in chemistry, engineering, and natural science, and last three years, the diploma of Associate (A.R.C.S. or A.R.S.M.) being granted to the fit.

The Royal College of Science for Ireland is under the Department of Agriculture and Technical Instruction. The College is situated at St. Stephen's Green, Dublin, and has three faculties—viz., Agriculture, Applied Chemistry, and Engineering. A limited number of scholarships are offered for competition among young men in Ireland who desire to acquire a thorough knowledge of technical agriculture. Each scholarship includes free admission to the first year's course of instruction in the College, a maintenance allowance of one guinea per week while in attendance at the College, and one third-class railway fare to and from Dublin. Candidates, who should be between eighteen and thirty years of age, must make application on a form, which may be obtained from the Registrar, Royal College of Science, Dublin. They must pass an examination in English, Latin or Irish, French or German, mathemathics, practical agriculture, and ability to impart instruction. The course of instruction in applied chemistry is as follows :

First Year.—Chemistry, Practical Geometry, Mathematics, Mechanics, Freehand and Model Drawing, and Physics.

Second Year.—Chemistry, Organic Chemistry, Mathematics, Physics, Mechanics, and Mineralogy.

Third Year.—Chemistry and Thermodynamics.

The cost of instruction is referred to later.

DIPLOMAS IN OPTICS.

The fitting of spectacles is now a well-recognised part of the chemist's business, and, it may be added, not the least remunerative. Examinations in optics are held as under, and many chemists go in for the diplomas as a tangible proof of their abilities in spectacle-fitting. The diplomas do not confer any legal status on the holders. It may be mentioned, however, that whilst the practice of optics is open to all, efforts are being made in some quarters to promote a Bill in Parliament to regulate the trade, but it must be years before such a measure can become law. Since last year the Society of Chemist-opticians has been founded—Mr. J. H. Cuff, 25 Friern Barnet Road, New Southgate, Hon. Secretary—with the objects of protecting the interests of chemists and promoting optical education.

The Spectacle-makers' Company, London, hold examinations about twice a year, usually in February and November.

There are three *Divisions* of the Company's examinations, namely :

1. *The Special Examination*, taken in three sections : (*a*) A written examination in elementary mathematics [a candidate will be excused this section (*a*) on production of a certificate from any of the following examining bodies, showing a sufficient knowledge in mathematics : The Oxford and Cambridge Local ; Science and Arts, South Kensington, Mathematics, Stage II. ; Matriculation of any University ; College of Preceptors' First Class ; Major Examination of the Pharmaceutical Society of Great Britain]. (*b*) A written examination in light, optics, the elementary theory of optical instruments, and in heat. (*c*) A *vivâ-voce* examination in the use and adjustment of the camera and projection apparatus, the telescope and binocular, the microscope, the sextant [a candidate who has been connected as Master or Assistant with the Optical industry for over seven years is entitled to be excused the whole of this Special examination. Chemists and druggists are exempt from (*a*) and pharmaceutical chemists from the whole of the Special examination ; see *C. & D.*, August 6, page 245].
2. *The General Examination*, taken in three sections : (*d*) A written examination in general and visual optics ; (*e*) a *vivâ-voce* examination in general and visual optics ; (*f*) a practical examination in the optical analysis of lenses, knowledge of materials employed and workmanship, and frame-fitting. [Until 1908, a candidate who has been engaged as Master or as Principal Assistant in fitting spectacles for at least ten years, and who is over thirty-five years of age, will be excused Section (*d*) of this General examination, as well as the whole of the Special examination, provided that he is entered for the examination in Sight-testing.]
3. *The Examination in Sight-testing*, taken in two sections : (*g*) A written examination in optics as applied to sight-testing ; (*h*) a practical examination in the adaptation of lenses to correct errors of vision.

In the near future the Company will require evidence of experience before admitting a candidate to the examination.

The Diplomas.—The diploma in General Optics is conferred on a candidate who has passed the General examination (preceded by the Special, if necessary). This diploma, however, will not be granted alone unless the candidate undertakes not to engage in sight-testing. The diploma in Sight-testing will only be granted to a candidate who has already gained the diploma in General Optics.

The following is the syllabus of the examinations :

(1) *For the Special Examination.*—(*a*) Elementary Mathematics as applied to Optics.—Arithmetic ; algebra to quadratic equations ; equations ; the measurement of trigonometrical angles ; the elementary use of tables of natural sines, cosines, and tangents, and of tables of logarithms and reciprocals. Text-books : "Elementary Algebra," Hall and Knight ; "Elementary Trigonometry," Hamblin Smith. (*b*) Light and Heat.—Elementary laws of light ; laws of refraction ; the index of refraction ; refraction as applied to lenses and prisms ; conjugate foci ; formation of images ; laws of reflection as applied to curved and plane mirrors ; umbra and penumbra ; photometry ; dispersion and achromatism ; lens-systems and their aberrations ; the elementary theory of optical instruments ; the construction and uses of instruments for measuring temperature, atmospheric pressure, and moisture. Text-books : "Heat and Light," Glazebrook ; "Optical Tables and Data," Silvanus P. Thompson. (*c*) Practical work with Instruments.—A general acquaintance with the construction and use of the camera, projection-apparatus, telescope, binocular, microscope, and sextant ; use of the Vernier. Text-book : "Drawing, Optical, and Surveying Instruments," Heather.

(2) *For the General Examination* (*formerly termed the "Modified"*).—(*d*) and (*e*) Light.—Elementary laws of light ; laws of refraction ; the index of refraction ; refraction as applied to lenses and prisms ; conjugate foci ; formation of images ; laws of reflection as applied to curved and plane mirrors. Text-books : "Heat and Light," Glazebrook ; "Optical Tables and Data," Silvanus P. Thompson. (*d*) and (*e*) Visual Optics.—General anatomy of the human eye ; the course of light passing through the media of the eye alone and modified by spherical and cylindrical lenses and prisms ; hypermetropia ; myopia ; astigmatism ; presbyopia ; instruments commonly used for determining the refraction of the eye ; trial-lenses ; test-types ; astigmatic chart ; the optometer ; the principle of the ophthalmoscope and retinoscope ; transposing. Text-book : "Refraction of the Eye," Hartridge. (*f*) Practical Work in Visual Optics.—Testing a plane surface ; measurement of focal length of spherical, cylindrical, and compound lenses ; use of the spherometer or lens-meter ; determination of the axis of a cylinder, and the angle of deviation of a prism ; analysis and neutralisation of spherical, cylindrical, and compound lenses, and lenses combined with prisms ; centering and adjustment of spectacle lenses and frames ; face-measurement for spectacles ; knowledge of the materials and of the workmanship employed in the manufacture of lenses and frames ; use of pebble-tester ; reading and writing prescriptions for lenses and frames. Text-book : "The Opticians' Handbook."

(3) *For the Examination in Sight-testing.*—(*g*) The theory and methods of the determination and correction of errors of refraction and accommodation in the healthy human eye. (*h*) The determination of visual acuity ; the parctical correction of errors of refraction and accommodation by subjective methods ; muscle-testing ; a knowledge of the instruments used for objective sight-testing ; colour-blindness. (A candidate is permitted to use his own trial-case and test-charts, and may employ such methods—whether subjective or objective—as he is accustomed to, in order to arrive at the correction needed by the subjects he is required to test at the examination.)

In addition to the books mentioned above, the following are recommended to candidates : "Contributions to Photographic Optics," by Professor O. Lummer ; "Photographic Optics," by R. S. Cole ; "Optics," by A. S. Percival ; "Practical Physics," by Glazebrook ; "The Microscope," by Gage ; "Ophthalmological Prisms," by E. E. Maddox ; "Physics," by Ganot.

The fees are (1) for the Special examination 2*l.* 2*s.*, (2) for the General examination 3*l.* 3*s.*, (3) for the Sight-testing examination 2*l.* 2*s.* The re-examination fee is 1*l.* 1*s.* Further particulars can be had from Col. T. Davies Sewell, 11 Temple House, Temple Avenue, E.C.

The British Optical Association, 17 Shaftesbury Avenue, W., have also an examination-scheme. In the B.O.A. scheme there are three grades of examination—the optic, dioptric, and fellowship—for which the fees are 1½, three and five guineas. The optic grade has to be passed by the candidate before he can pass to the higher grades. The examinations are held twice yearly in London. Candidates must be of British nationality. A new syllabus has just been issued, and certain concessions to chemists have been made in the first grade of the examination. The Secretary is Mr. J. H. Sutcliffe.

Optical Instruction.

The Northampton Institute, *Clerkenwell*, E.C.—At this institute a day and evening course of optical lectures and practical instruction, beginning in October and lasting till June of the following year, is held. A partial course of two afternoons a week is to be started next month for those already engaged in the optical industry. The facilities for acquiring optical instruction at this Institute are exceptional. Particulars can be had from Dr. R. Mullineux Walmsley, the Principal.

Mr. Lionel Laurance, 21 John Street, Bedford Row, W.C., conducts correspondence and personal classes in visual optics in preparation for the examinations of the Worshipful Company of Spectacle-makers. The fee for the Special examination of the S.M.C. (without heat) is 6*l*. 6*s*., other courses being in proportion. Mr. Laurance is official instructor to the S.M.C. and the National Association of Goldsmiths.

The Anglo-American Optical Company, 47 Hatton Garden, E.C., conduct a school of optics.

Mr. W. Banks, 23 Knowsley Street, Bolton, also prepares candidates for the S.M.C. and B.O.A. examinations.

METROPOLITAN SCIENCE SCHOOLS.

Central Technical College, Exhibition Road, S.W.—There are three diploma courses, each of three years: (1) Civil and mechanical engineering, (2) electrical engineering, (3) chemistry. Fees 30*l*. per session.

Technical College, Leonard Street, City Road, E.C.—The course extends to two years, except in the case of applied chemistry, which occupies three years. Fees 15*l*. per session. Evening classes are held at moderate fees. Principal, Professor Silvanus P. Thompson.

University College, London, Gower Street, W.C.—Faculty of Science. The tuition fees for a complete three-year course for B.Sc. amount to about 100*l*. Secretary, Dr. T. Gregory Foster.

King's College, Strand, W.C.—Fees are about the same as at University College. Evening classes are held. Professor R. T. Hewlett, of this College, holds occasional courses in practical and clinical bacteriology which are useful for pharmacists. The courses usually take in lectures, demonstrations, and practical work on the following topics:

> Morphology and biology of the bacteria. The cultivation and isolation of organisms; culture-media. Anthrax. Tubercle, Leprosy, Glanders. Actinomycosis. Diphtheria; Antitoxin. Typhoid fever. Suppuration and septic diseases. Tetanus, malignant œdema.

The fee is 3*l*. 3*s*. A course in clinical pathology (fee 2*l*. 2*s*.) includes the examination of blood, urine, vomit, fæces, and tumours.

City of London College, White Street, Moorfields, E.C.—Evening classes in all science subjects; fees for members 4*s*., for non-members 7*s*. per course of lectures; the course extends from October to May. Laboratory practice is 17*s*. and 20*s*. for ordinary courses. Special courses for University of London and Conjoint Board.

Evening classes in science subjects suitable for the Minor and B.Sc. are held at the Polytechnic, Regent Street, W.; the Polytechnic Institute, Borough, S.E.; the People's Palace, Mile End Road, E.; the Northern Polytechnic, Holloway, N.; Technical College, Chelsea; the Carpenters' Institute, Stratford, E.; Birkbeck Institute, Bream's Buildings, Chancery Lane, E.C.; and West Ham Technical Institute, Romford Road, Stratford. For particulars apply to the secretaries.

PROVINCIAL SCIENCE SCHOOLS.

The subjoined is not a complete list of the provincial schools, but it suffices to show students in the towns named that the opportunities for study are at their doors. They should call at the Colleges for full information.

Aberystwyth.—*University College of Wales.*—Composition fee for the science course, 10*l*. per session, exclusive of practical work.

Bangor.—*University College of North Wales.*—Terms as at Aberystwyth.

Barrow-in-Furness.—*Technical Schools, Abbey Road.*

Belfast.—*Queen's College.*—Arrangements similar to Cork (*q.v.*).

Birmingham.—*University.*—The instruction conforms with the conditions outlined above. *Municipal Technical School, Suffolk Street.*—Evening classes, some of which are suitable for pharmacy students.

Bradford.—*Municipal Technical College.*

Bristol.—*University College.*—The science courses are arranged for the examinations of the London University. Individual subjects may be taken.

Cardiff.—*University College of South Wales and Monmouthshire.*—Fees for science classes, 13*l*. 13*s*. per session.

Cork.—*Queen's College.*—Courses for the science degrees of R.U.I. and London are given. Registrar, Mr. Alexander Jack, M.A.

Dublin.—*Royol College of Science.*—The fees for a three-years' course for A.R.C.Sc.I. are 55*l*. Registrar, Mr. P. A. E. Dowling.

Dundee.—*University College.*—Botany, chemistry, and physics are taught in day classes, and chemical technology in the evening at the Technical Institute. Secretary, Mr. R. N. Kerr.

Edinburgh.—*Heriot-Watt College, Chambers Street.*—Here very efficient science courses are arranged in day and evening classes at low fees.

Glasgow.—*The University.*—Faculty of Science covers all the subjects for degrees in the chemical, physiological, and engineering sections. *Technical College.*—Day and evening classes in chemistry, applied chemistry, mechanical and electrical engineering, etc. Fees for three years' course about 40*l*. to 50*l*.

Leeds.—*Yorkshire College.*—The instruction is adapted to the University degrees and diplomas in science.

Liverpool.—*University of Liverpool.* Courses for degrees in science or special purposes.

Manchester.—*Owens College.*—The three years' courses for B.Sc. in applied chemistry costs about 70*l*. There are evening classes including a course in chemistry (fee 4*l*. 4*s*.) and botany (fee 2*l*. 2*s*.). The *Technical College* also gives sound education in science (Principal, Professor Pope, F.R.S.).

Newcastle-upon-Tyne.—*Durham College of Science.*—Fees for curriculum of B.Sc. Durham 56*l*. Day and evening classes are held. Secretary, Mr. F. H. Pruen.

Nottingham.—*University College.*—Day and evening science courses are given including various special courses in chemistry. Secretary, Mr. P. H. Stevenson.

Plymouth.—*Municipal Science, Art, and Technical Schools.*

Sheffield.—*University College.*—Day and evening courses in most science subjects are given at low fees (*e.g.*, chemistry 1*l*. 10*s*. per session). Registrar, Mr. W. M. Gibbons.

Wolverhampton.—*Municipal Science and Technical School.*

Chemist in the Government Laboratories, Clement's Inn Passage, Strand, London, W.C.—Applicants for appointments in the laboratories should apply to the Principal Chemist there, or to the Secretary of the Civil Service Commission, Cannon Row, London, S.W., who will furnish particulars of the examination for the appointments. Salaries vary from 160*l*. to 800*l*., with pension on retirement.

Supplementary Information.

WE are frequently asked by chemists' assistants what the requirements are for practice of pharmacy in the United States and Canada. We may take

The Ontario College of Pharmacy

as illustrative of the requirements in the Dominion. This College is the equivalent of the Pharmaceutical Society of Great Britain, in so far as it is the qualifying and registering authority. Its Council looks after such matters, while the College proper is a school of pharmacy. The law requires apprentices on entering the trade to register as such, they at the same time submitting evidence of having passed a Matriculation examination. They must serve four years, and the College sketches out for them a course of study for that period. They have to pass two examinations, Junior and Senior. Before the Junior examination they must attend a course of instruction in the Ontario College of Pharmacy, Toronto, or some other approved college, and after it a course in the Ontario College. The subjects of the curriculum are pharmacy, chemistry, materia medica, botany, and interpreting and dispensing of prescriptions. Candidates for the examination must be twenty-one, and the time occupied in attending the Junior course of lectures is credited as a portion of the four years' term of apprenticeship. Fee for the examination, $10.

This College is affiliated with the University of Toronto, which grants the degree of Bachelor of Pharmacy—Phm.B.—by matriculation and subsequent curriculum at some College of Pharmacy recognised by the University, the last of two courses being at the Ontario College. Also candidates must have obtained that College's diploma. The subjects of examination are botany and microscopy; theory and practice of chemistry and toxicology; materia medica, including posology and pharmacognosy; theory and practice of pharmacy, including interpretation of prescriptions and dispensing.

Minor men going to Ontario must pass at least the Final examination for the College's licence, and satisfy the authorities that they have experience according to the regulations.

The New York College of Pharmacy

we take as typical of United States methods in pharmaceutical education and qualification, but it should be noted that the statutory authorities in the States are Boards of Pharmacy which have the power to examine young pharmacists and grant them certificates of licence to practise in the State. These Boards always accept the diplomas of reputable Colleges of Pharmacy in lieu of their own examination, and the New York College is one of these. It is included in the Columbia University. It has professors of organic chemistry, botany, and materia medica, physics and chemistry, analytical chemistry and mathematics, pharmacognosy and technical microscopy, pharmacy, and physiological chemistry. Two years of study lead to the degree of Graduate in Pharmacy and qualify the graduate to meet any examination for the position of Licensed Pharmacist. A third, or post-graduate course of one year, open to graduates of this or other schools of equal grade, leads to the degree of Doctor of Pharmacy. During the Junior and Senior years the instruction occupies three days of the week, and on the alternate days students act as assistants in pharmacies, but many students, adopting the advice of the Faculty, devote the entire time of the second year to college-work. The annual fee for all regular Junior, Senior, and Post-Graduate courses is $100 each.

Students' Books.

The following list includes the most popular text-books for pharmaceutical students in use at the present time. From this list it is not difficult to make a selection of books for the purpose of education and for use in preparation for examination. It should be noted that the principals of the various colleges and schools of pharmacy have a preference for certain books, and it is well to ascertain by reference to the prospectus of the school what books are actually required for the course of instruction. Some of the colleges publish text-books for the use of their students—the "Westminster," for example, having a complete set of educational works.

Botany.
Bower's "Practical Botany for Beginners." (Macmillan.) 3*s*. 6*d*.
Green's "Manual of Botany." (Churchill.) Vol. 1, 7*s*. 6*d*.; vol. 2, 10*s*. 6*d*.
Lowson's "Botany." (Clive.) 6*s*. 6*d*.
Scott's "Introduction to Structural Botany." (Black.) 3*s*. 6*d*.
Vine's "Smaller Text-book of Botany." (Sonnenschein.) 3*s*. 6*d*.

Chemistry.
Attfield's "Chemistry." (Gurney & Jackson.) 15*s*.
Bernthsen's "Organic Chemistry." (Blackie.) 7*s*. 6*d*.
Henry's "Aids to Chemistry." (Baillière.) 4*s*. 6*d*.
Meyer's "Outlines of Theoretical Chemistry." (Longmans.) 9*s*.
Newth's "Organic Chemistry." (Longmans.) 6*s*. 6*d*.
Perkin and Kipping's "Organic Chemistry." (Chambers.) 6*s*. 6*d*.

Analytical Chemistry.
Clowes and Coleman's "Elementary Practical Chemistry and Chemical Analysis." (Churchill.) 3*s*. 6*d*.
Muter's "Analytical Chemistry." (Baillière.) 6*s*. 6*d*.
Newth's "Practical Chemistry." (Longmans.) 2*s*. 6*d*.
Perkins's "Qualitative Chemical Analysis." (Longmans.) 3*s*. 6*d*.
Proctor's "Pharmaceutical Testing." (*C. & D.* office.) 2*s*. 6*d*.
" "Practical Methods of Urine-analysis." (*C. & D.* office.) 2*s*. 6*d*.

Calculations.
Dobbin's "Arithmetical Exercises in Chemistry." (Thin.) 1*s*.
Whiteley's "Chemical Calculations." (Longmans.) 2*s*.

Physics.
Draper's "Heat." (Blackie.) 4*s*. 6*d*.
Everett's "Physics." (Blackie.) 3*s*. 6*d*.
Ganot's "Physics." (Macmillan.) 15*s*.
Glazebrook's "Heat and Light." (Cambridge Press.) 5*s*.
Loney's "Mechanics and Hydrostatics for Beginners." (Cambridge Press.) 3*s*. 6*d*.
Poyser's "Advanced Magnetism and Electricity." (Longmans.) 4*s*. 6*d*.
Stewart's "Light." (Clive.) 3*s*. 6*d*.
Thompson's "Electricity and Magnetism." (Macmillan.) 4*s*. 6*d*.

Materia Medica.
Flückiger and Hanbury's "Pharmacographia." (Macmillan.) 21*s*.
Gadd's "Drugs." (Baillière.) 5*s*.
Greenish's "Introduction to Materia Medica." (Churchill.) 15*s*.
Murrell's "Aids to Materia Medica." (Baillière.) 3 vols. 2*s*. 6*d*. each.
Southall's "Organic Materia Medica." (Churchill.) 4*s*. 6*d*.

Microscope.
Greenish's "Microscopic Examination of Food and Drugs." (Churchill.) 10*s*. 6*d*.
Hogg's "Microscope." (Routledge.) 10*s*. 6*d*.
Squire's "Methods and Formulæ." (Churchill.) 3*s*. 6*d*.

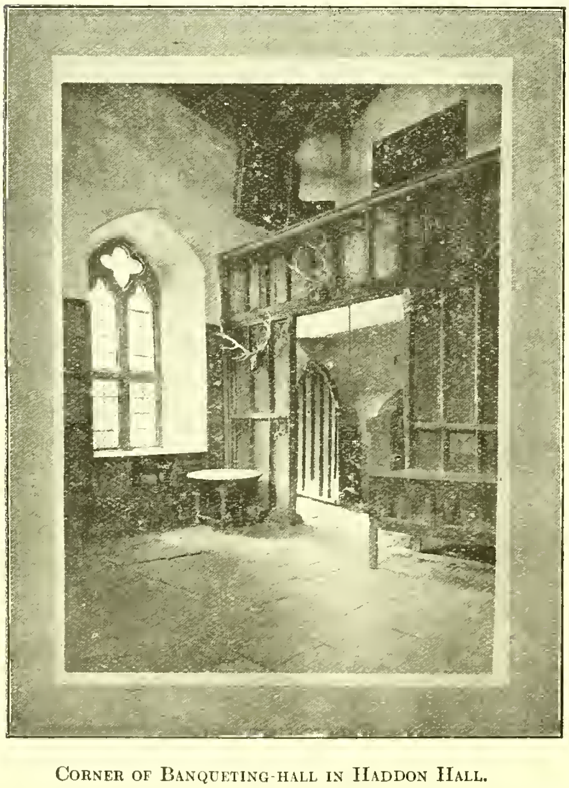
Pharmacy.
British Pharmacopœia, 1898. (Spottiswoode.) 10*s*. 6*d*.
Coblentz's "Handbook of Pharmacy." (Blakiston.) 18*s*.
Lucas's "Practical Pharmacy." (Churchill.) 12*s*. 6*d*.
Squire's "Pocket Companion to the British Pharmacopœia." (Churchill.) 7*s*. 6*d*.
White and Humphrey's "Pharmacopedia." (Kimpton.) 10*s*.

Poison Laws.
Chemists' and Druggists' Diary. Reprint, 1*s*.

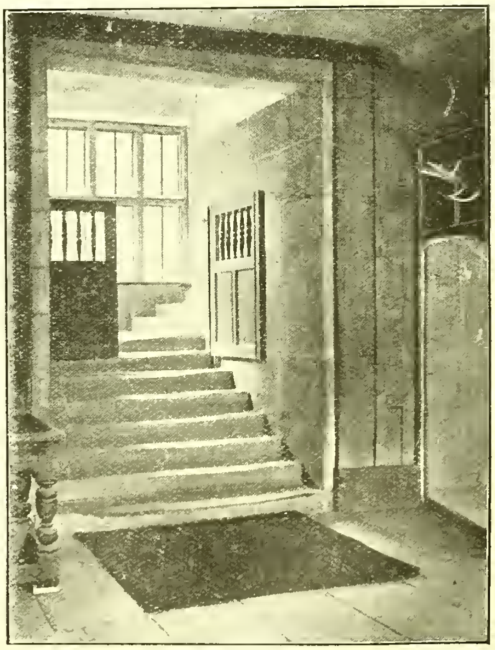
Dispensing.
Ince's "Elementary Dispensing Practice." (*C. & D.* office.) 3*s*. 6*d*.
" "Art of Dispensing." (*C. & D.* office.) 6*s*.

Prescription-reading.
Ince's "Latin Grammar of Pharmacy." (Baillière.) 5*s*.
Pereira's "Selecta è Prescriptis." (Churchill.) 5*s*.
Watson-Will's "Prescription-reading." (Metropolitan College.) 12*s*. 6*d*.

Haddon Hall from Bakewell Gardens.



Corner of Banqueting-hall in Haddon Hall.



Staircase from Banqueting-hall, Haddon Hall.

[For these photographs we are indebted to Mr. J. Gilbert Jackson, of Sheffield.

Visited by the B.P.C. on Thursday, August 11.

Observations and Reflections.

By Xrayser.

The Preliminary Education of candidates for professional qualifications, and the certification of such education by means of imperfect test-machinery, are generally accepted necessities. They have grown up with our modern craze for examinations, and it may be that to an extent they are desirable. But assuredly the claim has been pushed a great deal beyond reason. Men with a passion for their work will readily master all that is needful to know in connection with it; but three or four years spent in preparing for matriculation in subjects utterly unconcerned with it may easily ruin their special faculties. Nelson never could spell correctly; Clive was the despair of his teachers; George Stephenson could not read at eighteen; little modern examiners would inevitably pluck those men, and be shocked at their ignorance, and yet they served their generation fairly well. There are signs that examination-maniacs have had their day, and the suggestions offered by the Consultative Committee appointed by the Board of Education are among these. The Committee want to establish a central authority to provide for examinations in secondary schools, and they propose that the certificate shall not depend on the examination only, but that due regard shall be paid to the record of the candidate's school work. This would make it possible for George Stephenson to become an engineer even if he could not do Latin hexameters. They want professional authorities to accept certificates thus granted. The representatives of the Pharmaceutical Society on the Committee seem to be in favour of this little revolution, which credits their intelligence; but I read with regret a warm protest against any such retrospective inquiry, and interference with the scope and standard of the sacred examinations, in the "British Medical Journal," which I hope in this matter does not represent the profession.

The British Science Guild, which aims to induce all classes to apply scientific treatment to affairs of all kinds, looks like a harmless enough organisation, but with Sir Norman Lockyer for its President it is difficult to suppress the suspicion that it nurses a lingering hope of extracting from the Treasury some day those four-and-twenty millions which that gentleman last year declared to be urgently needed for educational purposes to enable this nation to maintain its position against its competitors. "To bring before the Government the scientific aspects of all matters affecting the national welfare": this is prominent among the Guild's intentions. How is it to be carried into effect? No information is given, and I can only surmise that the Guild will solemnly lecture Parliament from the pulpit of its own superior wisdom on Bills and legislative schemes as they come forward. This will be funny. Will the Guild proclaim that the Licensing Bill, the Pharmacy Bill, or Mr. Chamberlain's fiscal proposals are scientifically right or scientifically wrong, as the case may require? And how will they get at their conclusions? Surely they will not assert that scientific truth can be ascertained by the vote of a majority even of themselves.

The Shop-hours Bill has evidently the advantage of the Prime Minister's favour. He spared it from the guillotine when so many other measures not more controversial had to perish, and he made a gallant attempt to run it through its most critical stage on the peaceful evening when the Opposition had gone home in a body. On that occasion it was only the inconvenient conscience of his Chief Whip which checked his ardour. By the unkind specific exclusion of the medicine-trade from its benefits the Bill naturally loses its direct interest for pharmacists, but that very circumstance might make us unanimous in wishing to see it passed. Experiments on the vile bodies of our fellow-traders could not fail to be interesting, and it is certain that if the measure were once on the statute-book and working smoothly, there would not be much difficulty in the admission of chemists and druggists to participation in its provisions.

The Expert Officer, whom the President of the Local Government Board is thinking of appointing, on the recommendation of the Royal Commission on Arsenical Poisoning, "to inquire into and advise upon all questions affecting the purity of manufactured or prepared foods, whether of home or foreign origin," will not be long in office before a clamour will arise for his paternal intervention in the matter also of manufactured or prepared medicines. Indeed, with or without any clamour he will find it difficult to avoid dealing with some of them under the terms of his appointment. Malt extracts, phosphate compounds, tonic wines, cod-liver oil emulsions, and other nutritive medicaments have been insistently claimed as foods so as to avoid the Scylla of the medicine-stamp. The Charybdis of the L.G.B. inspector now awaits these elusive products.

The Chemist's Advertisement quoted last week from a Cambridge paper of 1804 indicates how much more pronounced was the tendency among the pharmacists of a century ago to combine groceries with drugs than it is now. The chemist's shop was then, and so it was in much more recent days, the recognised place to go to for such articles as sago, tapioca, anchovies, and macaroni. Perhaps our ancestors presumed on their reputation, and drove the public to grocers' shops for these goods by their high prices; perhaps it was the growth of the physic-trade which pushed the foodstuffs out; or it may have been an act of grace on the part of pharmacists. Anyway, it is certain that these were among the goods which we pioneered into favour, and then lost when the business in them was worth having. The reference to Indian Arrow Root in the advertisement is noticeable. Hanbury, in "Pharmacographia," says, "Arrowroot came into use in England about the commencement of this century"; but Mr. Deck names it as a stock article in 1804, and there is no sign in the advertisement that it was a novelty, or that the public were not familiar with it.

A Solicitor, writing in the "Law Times," lays down the dogma which, according to him, "cannot be doubted," that all callings requiring licences (solicitors primarily) should be regulated by the authorities so that the licensee should have a fair chance of earning a living. Cabmen and publicans he finds thus cared for, and *a fortiori*, he argues, the learned professions ought to be similarly protected. And yet it appears that neither the Law Society, nor the Lord Chief Justice, nor the Lord Chancellor can be persuaded to move in the matter. I fancy the State will have to provide for a good many millions before the turn of the solicitors—ay, or even that of the much more deserving chemists and druggists—comes.

"Poisons and Spells."—Such is the title of a new volume by Dr. Cabanes, once a pharmacist, now the most curious and entertaining of writers on historical medical subjects. He tells how little our ancestors knew regarding toxic drugs.

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The Conference at Sheffield.

The British Pharmaceutical Conference in the first year of its fifth decade is not as prosperous as it ought to be. The subscription revenue shows that the membership is 658, and although this is somewhat better than in 1902-3, it is not at all a figure to be proud of, and appears not to be realised by the members generally, although it is by the Executive. It may be that the unpaid subscriptions which the Treasurer referred to would bring up the membership to four figures, but still that would be meagre for the pharmacy of the British Empire, which is what the Conference represents. The fact is, of course, that as an organisation the Conference has no great pretensions. There is among us a longing for an annual gathering of this kind, in which the practice and the confraternity of pharmacy shall have full play, and we are bound to say that the Conference is increasingly successful in this respect. This week's meeting is unique among the one-and-forty in that the greater part of the first day was taken up by a debate which may very greatly affect the future of the Conference.

The Unofficial Formulary was designed eighteen years ago for two specific purposes—first, to secure a trial for preparations of new remedies pending their adoption by the British Pharmacopœia; and, secondly, to supply formulæ for preparations resembling proprietary articles. Its success is chiefly proved by the adoption of its monographs and formulæ by the British Pharmacopœia, and the Conference has gained much *kudos* by it, besides securing within the Conference a committee of practical men of the highest standing kept together and in correspondence with each other for the express purpose of devising or improving pharmaceutical processes. This is a point of high value and of far greater good to the Conference than the few sovereigns yearly that it has got out of the "Formulary." It has sold these interests to the Pharmaceutical Society of Great Britain for seventy guineas. We report the circumstances so fully in this issue that it is only necessary to mention here the two outstanding facts of the debate. The Formulary Committee were practically unanimous in accepting the Pharmaceutical Society's offer to sell their work and give their services to the Society for seventy guineas; but they explained that they had no option, as the Society intend to take the work whether they pay for it or not. We offer our sympathies to the committee. The second fact is one which does not concern the Conference, but the Pharmaceutical Society and pharmacy in Great Britain. Most people are aware that the Society is a statutory body empowered by charter and Acts of Parliament with the special duty of examination and registration, to which are added certain benevolent and educational functions. It is almost analogous to the General Medical Council, but for some time a few of its officers have taken the British Medical Association as an example, with the result that they are adding trading methods to their functions. The Society has nothing to gain by such methods; it may not legally trade for profit, yet the officer chiefly responsible for the proposed book assured the Conference on Tuesday that the book is "a business enterprise," and as business men those responsible for it are not to say what it is to be. This is a sound enough position for business men, but it is pitiful that the Society's historical and statutory position amongst the qualifying bodies of the country should be prostituted in this manner, and there can only be one end to it. Perhaps nothing can be more satisfactory to Mr. Squire and Mr. Martindale, whose books are now to be threatened with competition by a book produced cheaply by the help of State-given examination-fees, than the prospect of the Society being robbed of its statutory functions if it continues its trading methods. Of course, those responsible care not a straw for such arguments; they have bluffed the Conference out of its excellent work and are prepared, no doubt, to squeeze justification for their conduct out of the Charter. The discussion on this topic somewhat overshadowed **The President's Address.** Mr. Idris has made his years of office noteworthy on account of his presentation of the danger to the public by the association together in English medical practice of prescribing and dispensing. He entered very fully into the subject last year, with the result that medical men took the question up. Opposition to his proposals was to be expected, and it preponderated, but undoubtedly we have come somewhat nearer to the devolution of dispensing from prescribing, which is so much to be desired. Mr. Idris advances considerably this year, while he also deals well with pharmaceutical legislation. In this he is likely to take a personal part at St. Stephen's ere long. His address also contains an excellent *résumé* of progress in the chemistry of essential oils, a subject to which he has given close attention for many years. Owing to the "Formulary" debate only two papers could be taken on Tuesday. We shall deal with these and others read on Wednesday as concisely as possible.

Farr and Wright on Hyoscyamus Extract.

Standardised extracts are not a success, because they vary in appearance and consistency, owing to variation in the proportion of extractive in the preparations. This paper is the first of a series of notes on standardised powdered extracts, the authors being of opinion that the only satisfactory solution of the problem lies in that direction. Their proposal in regard to alkaloidal preparations is substantially as follows :

> Make a tincture or fluid extract of the drug, assay, evaporate to dryness, dilute with the powdered drug itself to the required standard, and pass through a No. 20 sieve.

With reference to hyoscyamus the authors find recorded data as to its alkaloidal strength widely different, the highest being Schmidt's 0.365 per cent. for the [German] stalks, and the lowest Gerrard's 0.045 per cent. for English biennial tops. J. C. Umney has given 0.08 per cent. as the average for the official drug, and this is substantially corroborated by the authors, who report on sixteen samples which assayed an average of 0.088 per cent. (highest 0.12 and lowest 0.064). They then deal briefly with the question of the strength of the official extract, which varies, the average being somewhere between 0.15 to 0.25 per cent. of alkaloid, and proceed to describe how a powdered alcoholic extract assaying 0.2 per cent. should be prepared. Their process is :

> Exhaust the official drug in No. 20 powder with 70-per-cent. alcohol by repercolation; determine the alkaloid in the percolate by Bird's belladonna-process; recover the alcohol from the percolate by distillation, and evaporate the residue to dryness (in water-bath and air-oven, temp. 60°-70° C.). Dilute the residue with standard powdered hyoscyamus to 0.2 per cent. of alkaloid, and pass through a No. 20 sieve.

Incidentally the authors describe results with four menstrua—viz., 90, 80, 70, and 60 per cent. alcohol. The 70-per-cent. was altogether best, the 1 of drug in 4 percolate assaying 0.022 per cent. alkaloid and 6.45 per cent. extractive, equal to 0.34 per cent. alkaloid in dry extract. In other words, 90 per cent. alcohol gave about 3 parts of extract assaying 0.39, 70-per-cent. alcohol gave about 6½ parts assaying 0.34, and 60-per-cent. alcohol gave 7 parts assaying 0.22. This suggestion was received with great favour, Messrs. T. Maben, H. W. Jones, F. H. Alcock, W. Gowen Cross, C. Symes, F. Ransom, James Grier. and Peter MacEwan making remarks. It was generally agreed that the extract produced is a fine preparation, and the idea of using the self-drug for dilution was commended.

Naylor and Chappel on Rosa Gallica.

Yellow and red colouring-principles have been isolated from the petals of *Rosa gallica*. According to Filhol the yellow one is quercitrin.

Messrs. Naylor and Chappel have repeated the work, isolating a yellow body having the empirical formula $C_{15}H_{12}O_6$, but all attempts to hydrolise it failed, nor could an acetyl derivative be obtained. It is, therefore, not quercitrin, from which it also differs in giving an orange-red precipitate with lead acetate, and in not fusing at 135° C. Harold Senier in 1877 described a red colouring-matter which he isolated from the petals. The authors have also obtained it, by Senier's process and another, but they are unable to confirm his observation that it forms crystalline alkali salts. They are now engaged on further work with larger quantities of the materials, with the view to definitely deciding what the colouring-matters are.

This concluded the day's work and the Conference adjourned shortly after half-past four.

The resumption of business on Wednesday morning was characterised by a small attendance, the majority of the members being engaged in visiting museums and other places of interest in the city. The first paper read was by

Alcock on Calumba Infusion and Liquor.

This note refers to the total solids and ash of these preparations. The alkalinity of the ash is a hitherto neglected factor, but the chief interest of the note resides in results given by the author of different periods of infusion, following the B.P. in other respects. Thus a quarter-hour infusion gave 0.25 per cent. of solids, yielding 0.074 [gram] of ash, which required 3.3 c.c. of decinormal sulphuric acid to neutralise it; the figures for a half-hour one were 0.61, 0.15, and 10 c.c., and for a twenty-four hours one 0.712, 0.227, and 13 c.c.; thus showing a noteworthy increase by double-time infusion, especially in the alkalinity of the ash. A commercial sample of liq. calumbæ conc. yielded 4.75 per cent. of solids, and the ash [0.167 gram] required 14 c.c. of decinormal acid to neutralise.

Mr. Martin initiated the discussion, in the course of which Dr. Symes expressed the general opinion when he said that the B.P. experiment of 1-to-9 liquors has been proved a failure as 1-to-7 preparations are desired. Mr. A. R. Tankard read the next communication—viz., that by

Allen and Tankard on Boric-acid Determination.

A melancholy interest attaches to this paper, the late Mr. A. H. Allen having started the work. It deals with the determination of boric acid in cider and various fruits. The authors found the acid in apples, pears, quinces, grapes, and pomegranates, hence it naturally occurs in cider, perry, and wines. They have proved its presence by drying the fruit or evaporating the liquid, then incinerating and treating the ash with excess of dilute hydrochloric acid. On partially immersing a piece of turmeric paper in the acid solution and drying, the paper acquires a brownish-red colour where the acid has acted on it. The paper also deals with the estimation of boric acid in small quantities, and describes the process which the authors prefer. This includes an ingenious adaptation of the well-known glycerin reaction. A known weight of substance is treated with solution of calcium chloride, evaporated, and charred. The ash is treated with water, and the clear solution evaporated to 25 or 30 c.c. This is neutralised with decinormal acid, methyl-orange being used as an indicator, then an equal volume of glycerin is added; this liberates boric acid, which is now titrated with vigenti-normal soda and phenolphthalein. The paper concludes with percentages of boric acid in various fruits and liquors.

The reading of this paper gave the President the opportunity of referring to the loss which the Conference, in common with chemistry generally, has sustained by the death of Mr. Allen, and Mr. Tankard also spoke sympathetically of his late chief. Little was added in the discussion on the subject of the paper, but Mr. E. White mentioned that the natural distribution of salicylic acid is much more general than has been supposed, and analysts have now to keep the fact in mind. The next paper was that of

Harrison Martindale on Radio-activity.

This communication is a *résumé* of recent knowledge and literature on radium and similar bodies, and concludes with a useful list of twenty-seven papers on the subject. It begins with a discussion of the proposition that the properties of radium are due to its atom breaking down, and that the radium atom itself is the offspring of uranium. The author adduces the evidence in favour of radium breaking down, incidentally quoting many of the startling and unrealisable calculations about how long radium will last and what it does in the way of heating. After a brief reference to Mendeléeff's scepticism about the changing atom, he proceeds to discuss the *alpha, beta,* and *gamma* rays and their properties, treating these as distinct from the emanation from radium of a gaseous body which is radio-active, and from which Ramsay and Soddy obtained the helium spectrum. In succession he also deals with polonium, Blondlot's rays, radio-activity of the air and other things, and the therapeutic use of radium-rays.

Dr. Martindale, in communicating the paper, illustrated it with a series of specimens of apparatus used in testing or applying radium. A beaker containing about thirty tubes of radium bromide was passed round—150*l.* worth—and it was safely returned to Dr. Martindale. Dr. Symes led off the discussion by relating a case in which the Finsen-light treatment was used with good results; then stopped, but the benefit was resumed when radium was applied. Mr. Rutherford Hill suggested that this kind of communication should take the form of an evening illustrated lecture.

The next paper was read by Mr. Rutherford Hill. It was by

Dobbin and White on Populin.

Populin is a glucoside which occurs in the bark and leaves of *Populus nigra,* and resembles salicin in therapeutic action—in fact, it is benzoyl-salicin. The purpose of this note is to describe how it can be made from salicin. Three processes are known, but Drs. Dobbin and White did not find them yield pure populin satisfactorily. The method which the authors have used with success takes advantage of the Schotten-Baumann reaction for introducing the benzoyl group. Twenty grams of salicin is dissolved in a litre of water, the solution cooled and made alkaline with potassium hydroxide. Benzoyl chloride is then added gradually, the solution being constantly shaken, so as to ensure that each portion of chloride is dissolved before another is added, the solution being kept alkaline with potash. Populin separates almost from the first, and when 10 grams of benzoyl chloride has been used, the precipitate is collected on a filter, washed, and dried. It is then washed with ether (to remove tetra-benzoyl-salicin), and recrystallised from water and (finally) alcohol. The populin so prepared is identical with natural populin, and is odourless, which synthetic populin has not hitherto been.

Following this came

H. W. Jones on Lin. Potassii Iodidi.

A muddle has always been the fate of this preparation, and it was thought to have been cleared up when the B.P. in 1885 adopted the late

Mr. Nathaniel Smith's suggestion that the original preparation was made with curd soap. Still it varies, perhaps because "the white curd soap made by Messrs. Gibbs of the City Soapworks, or Benbow's curd soap" is not always used. These were what Mr. Smith recommended. Mr. Jones, of Coventry, asked to produce a satisfactory liquid preparation, finds that one can be made with soft soap as originally suggested by Mr. A. L. Doran, of Bray, in the *C. & D.* eighteen years ago, which yielded an amber-coloured, viscous fluid. Mr. Jones gets a more liquid one with more alcohol. The following contrasts the formulæ :

	Jones.	Doran.
Soft soap	2 oz.	1 oz.
Iodide of potassium	1½ oz.	1½ oz.
Glycerin	1 fl. oz.	1 fl. oz.
Oil of lemon	1 fl. dr.	½ fl. dr.
Alcohol (60-per-cent.)	10 fl. oz.	—
Rectified spirit ...	—	1 fl. oz.
Water	—	10 oz.

Mr. Jones suggests that the fluid preparation should be called "linimentum potassii iodidi."

The discussion on this was one of the most general of the meeting, no fewer than twelve speakers joining in it, and the variety of opinion was as great as the variety of preparations that go under the name "linimentum potassii iodidi cum sapone."

The papers were now being got through rapidly, yet without haste, for as the programme was being cleared the members appeared to be the keener to discuss them. This was shown when they heard

H. W. and S. C. Gadd on Nux Vomica.

The fat natural to nux-vomica seeds is troublesome in making the liquid extract, and previous treatment of the seeds with fat-solvents is impracticable. When grinding some of the seeds in a Carter disintegrator the authors noticed that the centrifugal force of the machine separated the lighter parts of the substance, chiefly hairs, amounting to about 5 per cent. of the whole. This led them to treat the hairs and the rest of the seeds separately, when they found the former to yield 7 per cent. of fat and 0.5 per cent. of alkaloids, and the latter 2 and 1.5 respectively. Thus was started an investigation which included determination of fat and alkaloids in (1) decorticated seeds, (2) hairs and skins, and (3) whole seeds which proved that there is very little fat in the skins—indeed, more in the decorticated (3.5 per cent.) than in the whole seed (3.25 per cent.). Liquid extracts were made from each part, and various samples of seeds were used, 70-per-cent. alcohol being the menstruum, and it was proved that this menstruum extracts fat from the hairs in proportionately greater quantity than from the rest of the seed, so that if the hairs are rejected in making the liquid extract one gets a preparation less troublesome as to fat, and quite as rich in alkaloid. The authors are continuing the work, for the results with decorticated seeds were very encouraging, the liquid extract containing slightly less fat and slightly more alkaloid.

A neat little discussion followed the paper, Mr. J. C. Umney leading off by saying that there is no difficulty in getting the fat out of extract of nux vomica by the French method—viz., heating it with melted paraffin-wax, which absorbs the fat and rises to the top, leaving the extract free from fat. The next communication was by

Rodwell on Compressed Tablets.

At the last meeting of the Conference Messrs. E. White and H. Rodwell, following a previous communication by the former and Mr. R. A. Robinson, jun., suggested two excipients for the preparation of compressed tablets. These were as follows :

Theobroma Emulsion.

Oil of theobroma	25	parts
Hard soap	5	parts
Tragacanth	0.5	part
Benzoic acid	0.25	part
Water to	100	parts

Dissolve the soap in 25 parts of water by heat, add the hot solution to the melted theobroma, and mix by whisking or agitation; shake in the tragacanth, add the benzoic acid, then the remainder of the water.

Ether-alcohol Solution of Theobroma.

Oil of theobroma	1 oz.
Ether to	6 ,,

Dissolve and add an equal volume of rectified spirit as required for use.

Mr. Rodwell now adds several hints about the use of these which are the result of further experience. First he deals with the general principles of that granulation of the material which is essential in producing good tablets. Cohesiveness is quite needful, and is best secured by addition of sugar, glucose, or acacia. Which of these should be used must depend upon circumstances, but sugar may be dropped out if 8 per cent. of glucose is used—*e.g.*, in the case of phenacetin. When the tablet has a tendency to break down, powdered acacia corrects it. Mr. Rodwell also mentions cases in which the alcohol-content of the ether theobroma has to be modified in order to give perfect granulation. He then deals with drying the granules, stating that 45° C. need never be exceeded, shows how disintegration is ensured, and concludes with hints on actual compression, particularly dealing with finish and adhesion of material to the mould. Several new formulæ are given in the paper, including a pil. ferri from which ferrous carbonate is not formed until the tablet is swallowed, and which keeps ferrous.

Three other papers were taken before luncheon—viz. :

Branson on Uric-acid Determination.

At the last meeting of the Conference Dr. A. F. Dimmock and Mr. F. W. Branson described a process for estimating uric acid in urine which depends upon precipitation of the acid as ammonium urate, collecting this insoluble salt, treating with caustic soda, and allowing it to interact with sodium-hpyobromite solution, when nitrogen is evolved and is collected in a gas volumeter. Mr. Branson follows this up with a scale for correcting for pressure and temperature. This scale is also suitable for corrections in the case of urea and hydrogen peroxide, which can be estimated in the same apparatus—substantially a bottle (for the hypobromite reaction) connected with an inverted burette (gas volumeter).

Power and Tutin on Gymnema-leaves.

The leaves of *Gymnema sylvestre*, Br., have the property when chewed of rendering the taste of sweet and bitter substances imperceptible. Hooper examined the leaves chemically in 1887, describing especially gymnemic acid, a glucoside, which "forms insoluble salts with alkaloids, this accounting for its masking the taste of quinine and other bitter substances." L. E. Shore, of Cambridge, in a physiological contribution to our knowledge of taste-sensations (1892), gave examples of the action of gymnema, and explained its peculiarity by supposing that the nerve-fibres or nerve-endings capable of being stimulated by pure sweet and bitter substances are different from those which are excited by acid and salt (the leaves do not affect the taste of these). The work now reported upon from the Wellcome Chemical Research Laboratories was specially designed to determine more precisely the chemical character of Hooper's "gymnemic acid." This is done with the precision as to important detail for which Dr. Power is noted. It was first determined that the leaves contain no cynogenetic compound. Petroleum, ether, and chloroform extracted from the leaves 4.38 per cent. of resinous substances, and alcohol 17.02 of water-soluble matter free from alkaloid. A large quantity of alcoholic extract, prepared direct from the leaves, was resolved as far as possible into its constituents. Freed from alcohol and treated with water this extract yielded a resinous substance, A, more than three-fourths of which was soluble in petroleum ether, and from this was isolated a crystalline hydrocarbon, $C_{31}H_{61}$, corresponding to hentriacontane, hitherto only found in beeswax and the seeds of *Brucea sumatrana*. Formic and butyric acids were also isolated. The filtrate from A, on addition of sulphuric acid, yielded a precipitate (B), which on extraction with acetic ether yielded "gymnemic acid," which alone of all the things in the leaves aborts the sense of taste for sweet substances. The authors found this to be a mixture. By fusion with potash they obtained from it a compound of equal molecules of protocatechuic and para-oxybenzoic acids, which was also found in the portion insoluble in acetic ether. The filtrate from B yielded a lævorotatory modification of quercitrol (which was recently the subject of a communication to the Chemical Society) and a glucose. It is proved that gymnemic acid is not toxic.

Barger and Shaw on Digitalis.

The chemical and physiological assay of digitalis tinctures has occupied the attention of two Wellcome Physiological Research Laboratory workers, George Barger, M.A., D.Sc., and W. Vernon Shaw, M.A., M.D. They have examined nine commercial specimens of B.P. tincture of digitalis. Solids varied from 2.6 to 4.9 per cent., and digitoxin, by Keller's method, from 0.022 to 0.038 per cent. The toxicity of the tinctures, of the digitoxin obtained from them by Keller's method, and of the water-soluble substances (digitalin, &c.) in the tinctures, was determined physiologically with frogs, by injecting into the dorsal lymph-sac and observing the effect on the heart. It was found that the digitoxin and the water-soluble substances together were only about half as toxic as the tincture from which they were obtained. This deficit is due to the fact that more than half of the digitoxin escapes estimation when Keller's method is employed, as it remains on the filter with the lead precipitate. Confirmatory experiments were carried out with an artificial tincture, made by percolating hay with alcohol and subsequently adding a small percentage of Merck's digitoxin. The toxicity of Merck's digitoxin and of similar preparations was also determined, and it was found that the "pure" digitoxin resulting when Keller's assay-method is employed has only about two-thirds of the toxicity of Merck's crystallised substance. The authors conclude that Keller's assay-method appears to be of little value, and that the physiological method is the only reliable one.

Mr. Maben briefly discussed the last-mentioned paper, pointing out some things which he thought require the attention of the authors, and agreed that the physiological method is the only sure way of testing digitalis. After luncheon the first paper was by

Upsher Smith on Valerian.

Valerian used to be cultivated in several parts of England, Derbyshire being the county most addicted to the industry. Now a farm in the parish of Brackenfield is the chief centre of cultivation, and Mr. Upsher Smith, of Chesterfield, has visited this farm frequently so as to get acquainted with all the stages of cultivation and preparation up to the time of putting the drug on the market. It is reared from wild plants which are transplanted in the spring, and in the autumn the stems are shorn off with a scythe, the rhizomes dug up and filled in perforated boxes, which are placed in running water that washes away the earth ; then they are dried in a shed with perforated floor, below which is a coke stove. They are now ready for the market. In another note by the author and Dr. Drabble it is shown that the Derbyshire plant which yields these rhizomes is either *Valeriana sambucifolia* or *V. Mikanii*.

Following this came the last paper read, and one which produced an excellent discussion, viz. :

Bird on Pharmacopœia Desiderata.

The object of this paper by Mr. F. C. J. Bird is to open a discussion on the present British Pharmacopœia, and he submits points from his practical experience during the past six years. Mr. Bird commences by referring to the letter which Dr. MacAlister, Chairman of the B.P. Committee, recently sent to the Pharmaceutical Council, soliciting the co-operation of that body and pharmacists in the work of revision. One of the greatest faults of the B.P., 1898, is the absence of definite lines of impurity in medicinal substances, and while not advocating absolute chemical purity, unattainable except at great cost, he thinks that the U.S.P. method of limiting impurities might be indicated in the B.P. text, special attention being given to the strengths of solutions of the substances under test. In this connection the author also refers to the presence of arsenic in certain chemicals. He then proceeds to discuss briefly the B.P. as a legal standard, showing the need for a common understanding among authorities as to when it cannot be reasonably taken as the standard. He further refers to the need for certain official assay-processes (opium, belladonna, &c.) being thoroughly overhauled, and concludes by asking to what extent the metric quantities in B.P. formulæ are used.

The discussion revealed the general opinion that in revision of the Pharmacopœia pharmacists should especially be consulted and have a voice in determining the standards according to which they are required to deal out certain articles to the public. Mr. Glyn-Jones made the useful suggestion that in the next B.P. the titles of articles which are in common use for other than prescription-purposes should be marked with an asterisk. Another paper had been communicated, but was not read. It was by

Davis on Sanseviera Thyrsiflora.

This is a South African plant, called Sikolakota there, the rhizome of which is peeled and chewed by Boers who suffer from hæmorrhoids. It always cures them, and Mr. Davis was asked to find out what it is that does it. He has discovered a glucoside and something else in the centre of the rhizome, and that the fresh rhizome is active, and the dried almost inactive. He therefore suggests that for prescribing-purposes the juice of the fresh rhizome, preserved by the addition of 20 per cent. of glycerin, should be employed. Ethylic alcohol impairs the therapeutic action of the juice.

The Conference needs at least one hour of the ten to devote to

The Pleasant Things.

On this occasion there was a tone of sadness in votes of condolence with the families of the late Mr. A. H. Allen, F.I.C., F.C.S., and Mr. William Ward, F.C.S. ; which done, the local Association received the customary gift of books from the Bell and Hills fund.

Then Mr. Francis Ransom, who served the Conference as Secretary for many years, retiring in 1903, was presented with a gold watch, writing-desk, and album of autographs. It was agreed to meet in Brighton next year, when Mr. W. A. H. Naylor will make a popular President. Birmingham asked to be allowed to entertain the Conference in 1906, and Manchester extended an invitation for 1907.

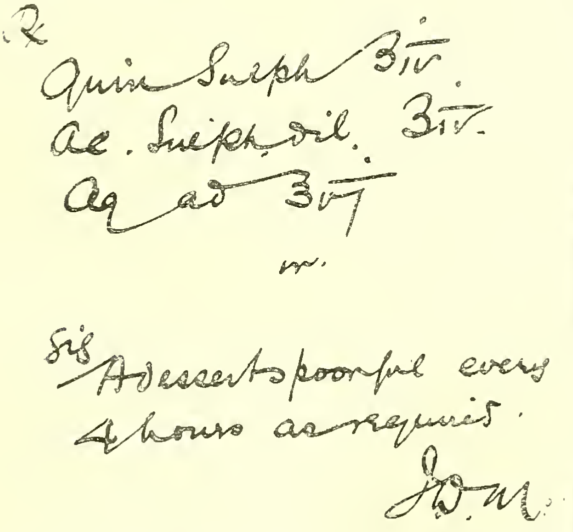
On the whole a good Conference, and in the scientific and social departments a big success. The Sheffield Local Committee and their ladies had arranged everything so well and so thoughtfully that we heard not a single grumble.

Natal Spirit-duty Withdrawn.

A letter has been received by Messrs. S. Maw, Son & Sons from Mr. G. A. Champion, President of the Pharmaceutical Society of Natal, stating that "After strenuous efforts the Government have been induced to withdraw the duty imposed on July 1 on tinctures and spirituous preparations, for which we are truly thankful." It will be remembered that in our issue last week, page 234, we reported that this duty came into force provisionally on July 1, but that an energetic opposition was to be offered to the proposal by several leading members of the Pharmaceutical Society. Judging from the above letter, which came to hand by this mail, their efforts have been successful, and exporters may breathe freely again.

The Un-medical Prescription.

The prosecutions at Birmingham reported on page 267 have aroused considerable comment in the lay Press. The point seized upon (and magnified) by the lay mind was the remark, obviously made in all sincerity, by Mr. Heath that he did not think the prescription handed to him was a doctor's because it was so legible. The original prescription has been sent to us, and we reproduce it for the benefit of our readers :



℞

Quin Sulph ʒiv.

Ac. Sulph. dil. ʒiv.

Aq ad ʒvj

m.

Sig A dessertspoonful every 4 hours as required.

J. D. M.

It will be seen that the prescription bears all the traces of having been written by a medical man with a full knowledge of prescription-writing, and we venture to think that the large dose of quinine sulphate prescribed weighed more with the dispenser than the good writing made so much of. Though not desirous of minimising the "enormity" of Mr. Heath's offence, we are quite at a loss to understand the reasoning which prompted the Birmingham Magistrates to impose a fine of 40*s*. and costs on the one offender, while requiring the other defendant merely to pay the costs. In the one case the error was deliberate, and with the safety of the public in view; but in the other there was apparently negligence, which, according to the prescriber, might have been attended with serious results.

An Australian Customs Decision.

Doan's backache and kdney pills have been the means of obtaining from the Federal High Court of Australia an important decision which will affect any Customs prosecutions instituted before September 16, 1902, the date when the Act of the Commonwealth Parliament imposing uniform duties was assented to. On October 3, 1901, the Customs Act had been assented to. This was a machinery Act, which imposed no duties, but provided the regulations and other machinery whereby the Commonwealth Government could take over from the States the collection of the Customs duties. Thirteen days later, on October 16, 1901, Peter Britz, the manager in Australia of the Foster-McClellan Co., proprietors of Doan's backache and kidney pills, produced a declaration to a Customs officer in which he stated that the value of certain pills imported was 308*l*. 6*s*. 8*d*. It is not disputed that this was the fair and real market-value at which such goods were ordinarily sold at the time of shipment in the principal markets of the country whence they were exported, and without any deduction. One section of the Customs Act above referred to laid down an arbitrary rule that the value in bulk of proprietary medicines was to be computed not as that at which they would be sold in the market from which they had been exported, but at their value after being packed ready for retailing, less the actual cost of packing. This would have made the value of the pills something over 9,000*l*., and the question before the Court was whether this particular section was in force. It was contained in Part 8, headed "Duties," and the first section in that part was "this part of this Act shall not affect any duties payable under any State Act." At that time, the Commonwealth Parliament not having passed a uniform tariff, the State tariffs were still in force. While by a constitutional usage duties other than those imposed by the State could be collected and afterwards validated by an Act imposing a uniform tariff, the Chief Justice held very clearly that it did not follow that Parliament had the power to make unlawful an action which was lawful when it was done, nor even if they had the power did it follow that they had exercised it. There was nothing whatever in the Customs Tariff Act to suggest that the Commonwealth Parliament had applied its mind to any such matter, or that it intended by way of retrospective legislation to make unlawful an action that was lawful when it was done, and it would require extremely plain language to infer any such intention from any legislative Act. There was none, at any rate, in that case. The matter came before the High Court on an appeal from the decision of the Lower Court, convicting Britz on a charge of making a false declaration regarding the value of certain imported pills. The appeal was therefore dismissed, with costs. We understand that this decision only affects those cases which were instituted between the first declaration of the new duties and before the actual passing of the Customs Tariff Act.

Russia Increases Duties.—Russia has put an increase of 20 per cent. on the import-duty on animal fats, fish oils, olein, spermaceti, stearin, and white and red lead.

The Travelling Pharmacy.—A telegraphic communication from Kharbin says that four railway waggons have been fitted up at that town as a circulating pharmacy for the Manchurian Army, with its centre of operations at Liao-yang.

Roach's Sea-sickness Draught is the subject of a note in the "Phar. Zeit." by H. Bertram, of the Pharmacological Institute of Bonn University. He has tried to analyse it, and comes to the conclusion that its active constituent is chloral-hydrate, present to the extent of 2.85 per cent.

South African News.

(From our own Correspondents.)

Note.—The Chemist and Druggist is regularly supplied by order to all the members of all the Pharmaceutical Societies in British South Africa, viz. :

South African Pharmaceutical Association.
Pharmaceutical Society of Cape Colony.
Natal Pharmaceutical Society.
Transvaal Pharmaceutical Society.
Rhodesia Pharmaceutical Society.
Northern District Chemists' Association.
Pharmaceutical Society of Orange River Colony.

Cape Colony.

The Meeting of the next South African Medical Congress has been fixed for June, 1905. Dr. Darley-Hartley, Editor of the "South African Medical Record," will be President of the General Section.

Dental Reciprocity Wanted.—On July 15, in the Supreme Court at Cape Town, the Chief Justice (Sir Henry de Villiers) gave judgment in the matter of Moore *v.* the Colonial Medical Council. The application was under Section 19 of Act 34 of 1891 for an order that a licence to practise as a dentist be issued to the applicant. The objection raised by the Medical Council was two-fold—namely, that the applicant's qualification was not recognised by the General Medical Council of Great Britain as required by Regulation No. 1 of the Colonial Medical Council, and that there was no such reciprocity between the United States, where the applicant obtained his diploma, and this Colony, as was contemplated by Regulation No. 10. There was, however, no formal evidence as to whether the British Council would recognise the applicant's diploma, which he obtained from the Pennsylvania Dental College after a four-years' course of study at that institution. Copy of a cable from the Agent-General had been produced by the respondent to the effect that no Pennsylvania degrees admitted to registration in Great Britain. This cable was, of course, not strictly evidence, but if the information be correct, it would be impossible to hold that the Colonial Medical Council had not adhered to its own lawful regulations. The applicant had stated in his affidavit that other holders of diplomas similar to his had been admitted here, but the fact that the Council had in other cases departed from its regulations would not entitle the applicant to claim that the Council should admit him in the face of its own regulation. He was not, therefore, prepared to decide that Regulation No. 10 was a valid one, but the question must be left open for further consideration. There would be no further order on the present application, but leave would be reserved to the applicant to renew his application on production of proof that the British Medical Council would recognise his diploma as sufficient to admit him to registration as a dentist in Great Britain, and that in other respects he had the necessary qualifications.

The Excise-duty.—In connection with the use of duty-free spirit at the Cape for certain products made by the local manufacturing chemists, the Government has given its decision in the following letter addressed to our Cape correspondent :

> Treasury, Cape Town,
> July 15, 1904.
>
> *Colonial Spirits used in the Preparation of Tinctures, Etc.*
>
> Sir,—In connection with your letter of June 29 and my reply of July 1, I am to inform you that the Treasurer has now approved of a rebate of Excise-duty being granted in respect of such essences and medicinal preparations—including those known as Dutch medicines—as are admitted by the Customs authorities at the *ad valorem* rate of duty, but no rebate will be granted in the case of preparations containing tinctures made from Colonial spirits.
>
> Before any rebate is granted, it will have to be proved to the satisfaction of the Treasurer that the duty on the spirits on which the rebate is claimed has been paid, and that such spirits have been used in manufactures entitled to rebate.
>
> I have the honour to be, Gentlemen,
> Your obedient servant,
> (Signed) Wm. A. Collard, Assistant Treasurer.

In the "Cape Government Gazette" of July 15 a proclamation appears granting preference to Canada. The Dominion will enjoy this preference from July 1, 1904, throughout the South African Customs Union.

Customs Amendments.—The following is a copy of the draft Bill :

> Be it enacted by the Governor of the Cape of Good Hope, by and with the advice and consent of the Legislative Council and the House of Assembly thereof, as follows : (1) From and after the date of this Act, the Customs Amendment and Tariff Act, 1903, shall be read subject to the following amendments, viz. : (*a*) In the item numbered 43 in the schedule marked B, for the words, "Medicines, patent or proprietary," the following words are hereby substituted—viz., "Medicinal preparations not being drugs in their pure and unmixed state."

The draft Bill has been referred to the Management Committee for consideration.

The Imports of Drugs and Chemicals into Cape Colony during the three months ending March, 1904, amounted in value to 69,000*l.*, against 124,000*l.* for the corresponding period of 1903.

Orange River Colony.

According to Official Figures which have been issued by the Collector of Customs of Bloemfontein, the imports of drugs and chemicals for the nine months of 1902-3 amounted in value to 13,812*l.*, compared with 17,349*l.* for 1903-4. The imports also included the following, the figures in parenthesis being those for the nine months, 1902-3 : Acetic acid, 140 gals. (48 gals.); extracts and essences, 1,594*l.* (1,574*l.*); medicinal preparations, 11,195*l.* (9,487*l.*); essential and perfumed oils, 151*l.* (39*l.*); paints, colours, turpentine, and varnish, 10,135*l.* (5,234*l.*); perfumery, cosmetics, powders, and soap for toilet-use, 3,131*l.* (2,783*l.*); spices, 878*l.* (579*l.*).

Transvaal.

The Pharmacy Ordinance.—The Medical, Dental and Pharmacy Ordinance was read a second time by the Legislative Council on July 12, on the motion of the Attorney-General, Sir Richard Solomon, who explained that the only law in existence up to the present was the Proclamation No. 1, of 1902, which was purely a temporary measure. He explained the provisions of the Ordinance, saying with regard to chemists and druggists that all persons entitled to practise now are entitled to certificates of registration, while in the future the Ordinance provided that any person who has served for a period of four years with a qualified chemist, and who passes an examination prescribed by the Medical Council and the Pharmacy Board, can obtain a certificate of registration from the Colonial Secretary. He proceeded to explain other parts of the measure, but without expressing anything that was novel. The Colonial Secretary seconded the motion for the second reading, when Mr. Hosken asked the Attorney-General how cyanide of potassium would be treated as regards sale. The Attorney-General thereupon explained the provisions of the measure with a view to assuring Mr. Hosken that there was nothing to fear about the mining authorities having difficulty in getting what they required where the safety of the public is concerned. The Committee stage was taken on July 13, and the Ordinance has since been read a second time.

The Odessa "Novosti" says that a local school of pharmacy will be opened in September, and will be under the jurisdiction of the Minister of Public Instruction.

The State of Danish Pharmacy.—The possibility of the pharmaceutical assistants in Denmark striking is now being discussed, in consequence of the negotiations between them and the owners having broken off. The former demand an increase of salary and fewer working-hours. They number some four hundred, and as they hold well together there is every chance of their carrying through their wishes against the two hundred proprietors in the country.

The Microbe of Malaria.—Drs. Montoya and Flores, of Medellin, Colombia, announce that they have discovered the true microbe of paludism (malaria), and that it can be cultivated in mediums prepared with flowers of *Erythrina umbrosa ducara*. The official report has been sent to the Academy of Paris. Should this be true it will be of great interest to the Sanitary Board of the Panama Canal, says Mr. E. H. Plumacher, the United States Consul at Maracaibo, Venezuela.

BRITISH PHARMACEUTICAL CONFERENCE.

FORTY-FIRST ANNUAL MEETING.
SHEFFIELD, AUGUST 8 TO 11, 1904.
President:
MR. T. H. W. IDRIS, J.P., F.C.S.

"DEO ADJUVANTE LABOR PROFICIT"—the motto of Sheffield; and as we look at the Lord Mayor's reception-card, topped by the arms of the city, we are reminded that amid all we printed about Sheffield last month not once did we reproduce its heraldic device. But now we commence the forty-first report of the B.P.C. veritably within the city's portals. The reception which the Lord Mayor and Lady Mayoress (Mr. and Mrs. John R. Wheatley) gave to the Conference members on Monday evening was in the fine Town Hall, a quite recent structure in which all that is best of the old is reproduced, nothing being more typical of our island hardiness than the oak panelling which lines the walls. The whole of the reception-rooms were opened for the occasion, and after bowing to the principal citizen and his good lady we passed slowly along until the magnificent portal, reproduced here as a headpiece, met our gaze. It was within that the red-leather covered chairs were set for a series of concerts which were to begin at nine o'clock. Then the gentleman in pink silk stockings who announced us to the company came along a path lined with smiling ladies and chemists let loose. He bore the mace and preceded his Lordship and his Lady. Behind them came Mr. Idris, the Mayor of St. Pancras, and the Mayoress—he wore his chain of office; and after them Mr. R. A. Robinson, the President of the Pharmaceutical Society of Great Britain, who had Miss Robinson with him. Mr. and Mrs. Newsholme and others followed. Ireland was represented by Mr. and Mrs. W. F. Wells, Mr. and Mrs. Henry Conyngham, Mr. and Mrs. George Beggs, and Mr. Nicholl, of Belfast. The Scotch contingent was so strong as to be almost equal to their compatriots who have left their country for their country's good and the benefit of the world generally. Mr. Johnston, Mr. Kirkby, Mr. Pidd and Miss Pidd were among the Manchester folk who were present; Mr. Edward Evans, jun., Mr. J. Herbert Evans, and Dr. Charles Symes stood for Liverpool, Mr. A. Hanson for Bradford, and Mr. Pilkington Sargeant, of Leeds, was one of the contingent of pharmaceutical teachers present; Mr. F. H. Alcock, Mr. William Duncan, Mr. John Lothian, and Mr. W. Watson-Will were others. Mr. Davy Turney, of Plymouth, marked the southernmost point of England.—But the concert awaits our notice and we cannot do better than refer those who read to the programme opposite.

After Miss Skidmore's selection from Southey the Lord Mayor cordially welcomed the members of the Conference to the city, and referred to the improvements that have taken place in Sheffield since the Conference last met there twenty-five years ago, also speaking sympathetically of the death of Mr. A. H. Allen. Mr. Idris thanked the Lord Mayor for his hospitality; so did his fellow county councillor (Mr. Robinson), who fills the Bloomsbury chair, and his predecessor (Mr. Newsholme) spoke as the President of the local Pharmaceutical Society. Then the Lord Mayor found pleasure in his response, for he is in the same business as Mr. Idris, with a greater reputation for hop ale. So the pleasure he had in meeting the cream of British pharmacy was enhanced by the acquaintance he made with its leaders—Mr. Idris, a fellow-worker in assuaging the thirst of the community, and Mr. Robinson, a fellow-worker in municipal matters.

The Council-room naturally followed. There Onslow Ford's magnificent bust of Queen Victoria shadows the Lord Mayor's chair, and in front of the Aldermen's daïs was a plentiful table of viands which pleased the guests highly. A fitting prelude to the next day's banquet of pharmaceutical things that was served at University College.

Programme.

1st Concert at 9 o'clock.

Song ...	"The Toreador's Song" (from Carmen) ...	*Bizet.*
	Mr. T. Lally.	
Duet	"When the Wind Blows in from the Sea"	*Hy. Smart.*
	Miss Maud Johnston and Mr. J. A. Marsden.	
Recital	"The Well of St. Keyne" ...	*Southey.*
	Miss Agnes Skidmore.	

2nd Concert at 9.40 p.m.

Song	"Angels Guard Thee"	*Godard.*
	Mr. J. A. Marsden.	
Song	"The Barley Sheaves" ...	*Needham.*
	Miss Maud Johnston.	
Song ...	"The Sound of the Drum" ...	*Jude.*
	Mr. T. Lally.	
Song	"Sunshine and Rain" ...	*Blumenthal.*
	Miss Agnes Skidmore.	

3rd Concert at 10.20 p.m.

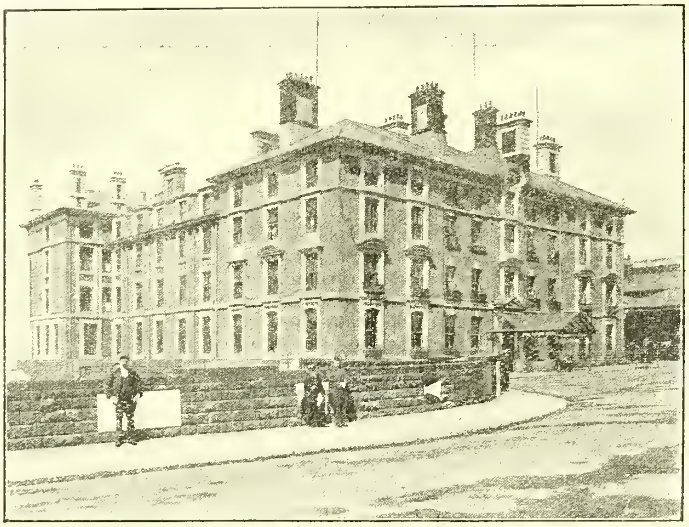
Song ...	'Let me dream again"	*Sullivan.*
	Miss Maud Johnston.	
Recital ...	(a) "Burglar Bill"	*Anon.*
	(b) "Lessons in Love"	*Anon.*
	Miss Agnes Skidmore.	
Duet	"Love and War"	*Cooke.*
	Mr. J. A. Marsden and Mr. T. Lally.	

Accompanist ... Mr. F. O. Ashmore, I.S.M.

First Session, Tuesday, August 9.

THE members were slow in gathering at University College on Tuesday morning, and it was a quarter past ten before the President (Mr. Idris) ascended the platform, accompanied by Mr. Newsholme (Chairman of the Local Committee), Mr. R. A. Robinson (President of the Pharmaceutical Society of Great Britain), Dr. Charles Symes, Mr. W. H. Martin, Mr. J. C. Umney (Treasurer), and Mr. E. Saville Peck, M.A., and Mr. E. White, B.Sc. (Hon. Secretaries).

At this time the body of the hall was well filled, a fair number of ladies being present. The President was received with applause when he rose to say that there were several gentlemen in the hall who should be on the platform. Mr. Ransom and Mr. Naylor therefore, in response to his invitation, went there.



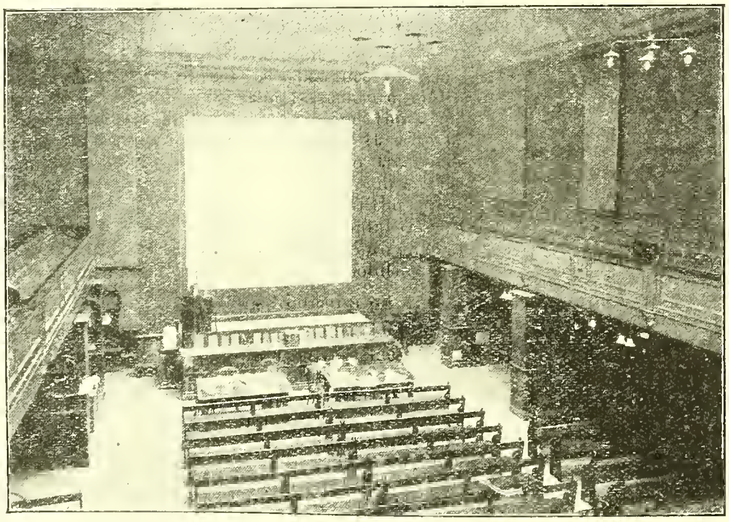
Royal Victoria Hotel.

The President then called upon Mr. Newsholme, who gave

An Official Welcome.

Mr. Newsholme said : Mr. President, Ladies, and Gentlemen,—I regret to have to say that Dr. Hicks, the Principal of the Sheffield University College, is unable to be with us this morning. Those of us who know Sheffield know that Dr. Hicks is an exceedingly busy man. You are all aware that we are doing our best to get a University for Sheffield at the present time (this is only Sheffield University College), and I mention the fact because Dr. Hicks, who has been working extremely hard for some months, and, indeed, for the last few years, is taking a holiday on the Norfolk Broads, but he would willingly have come back to welcome the Conference to the Sheffield University College but it would have meant taking three days out of his brief holiday. In these circumstances I am sure that you will all excuse him for his absence. In the absence of Dr. Hicks the Local Executive have been good enough to ask me to give a welcome, on behalf of the chemists of Sheffield, to the Pharmaceutical Conference. Mr. President, ladies, and gentlemen, the Lord Mayor of Sheffield last night gave us a very hearty welcome on behalf of the citizens of Sheffield to the Pharmaceutical Conference, therefore it is unnecessary on my part to say anything more on municipal grounds, but I will confine myself to the question of chemists being received by chemists. I have here, on behalf of the pharmacists of Sheffield, to give you a very hearty welcome. Twenty-five years ago! Time passes very quickly—indeed, it seems but a few years since the Conference met in Sheffield. Great changes have taken place in Sheffield since that time—Sheffield has progressed and much has happened. We have broader streets and I think broader views also. I am not quite sure that we pharmacists have progressed as much as we might have done, but we have managed to exist, which is a good thing at the present time. I am not quite sure that the Conference twenty-five years ago did not have a good deal to do with a better feeling among the pharmacists of the city which has been maintained to this time. We have looked forward since last year to renewing our acquaintances and cementing new ones—indeed, last night we were able to do so.

I must not take up your time. I again say we give you a very hearty welcome. We do not want to say it only in words, but to show it more, during the next few days, in the opportunities you will have of seeing the large works of the city and the beautiful country surrounding it; and I hope you will all be better for your visit when you go away.



Sheffield University College Hall,
Where the meetings were held.

The President said : I have pleasure in moving that you give a very hearty vote of thanks to our genial, old, and respected friend Mr. Newsholme for his very hearty Sheffield welcome here to-day. We deplore the absence of Dr. Hicks, but the reason of his absence has been explained by Mr. Newsholme and you will all join with me in wishing a happy realisation of his scheme for providing a University for Sheffield.

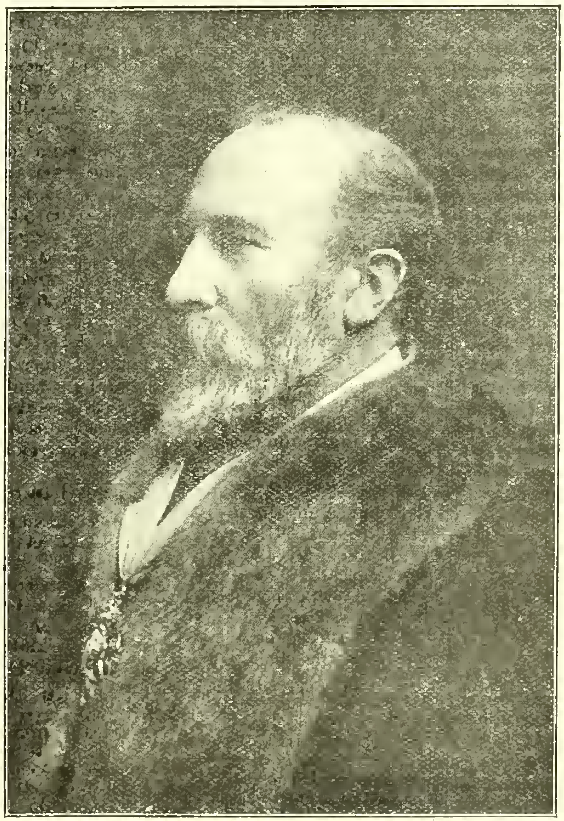
Mr. N. H. Martin seconded the motion, which was carried with enthusiasm.

Mr. Idris then, at 10.27, rose to deliver his presidential address. He said he would not attempt to read it all as it was too long, and concluded at 11.18 A.M.

The Presidential Address.

Great is the honour, great the responsibility, of addressing you to-day, when the Conference, returning to Sheffield after the lapse of a quarter of a century, holds the forty-first of its annual meetings.

That in the encouragement of pharmaceutical research and the promotion of friendly intercourse amongst pharmacists the Conference has fully maintained the objects for which it was formed is generally recognised, and the splendid record of the admirable work carried on under its inaugurating and stimulating influence is ample excuse for me in momentarily dwelling on that most interesting part of the Conference's history—the period of its incubation. Particularly *à propos* is this when we recall the fact that it was at our last meeting in Sheffield that the veteran to whose early labours the Conference is immeasurably indebted, Dr. John Attfield, founder and one of the first two Hon. Secretaries of the Conference, tendered his resignation after sixteen years' service. The change thus involved was considered so serious by the Committee that at their urgent request Professor Attfield consented to continue the duties for another year. It would appear that the idea of holding annual provincial gatherings of pharmacists from all parts of the country was first suggested by the late Mr. G. F. Schacht, in September, 1852. Later, in May, 1863, Mr. Richard Reynolds saw in the occasion of the meeting of the British Association at Newcastle in August of that year an opportunity for a conference of pharmacists with a view to promoting systematic scientific inquiry. Mr. Reynolds found a supporter in Mr. Henry B. Brady, and Mr. G. F. Schacht referred in the correspondence which followed to his earlier suggestion that the annual meeting of the Pharmaceutical Society should be held not always in one fixed place, but in rotation at the various towns of importance where its members resided.



Mr. T. H. W. Idris,
President British Pharmaceutical Conference, 1902-4.

So far as the peripatetic annual meeting of the Pharmaceutical Society was concerned, Mr. Schacht's views were not generally accepted, but 1863 witnessed a large body of opinion favourable to the holding of an annual assembly of pharmacists. From the moment Dr. Attfield joined Messrs. Reynolds and Brady in initiating such meetings the Conference proved a success. Resulting from a circular issued by these gentlemen on July 21, 1863, fifty prominent pharmacists gave cordial support to the scheme, and the B.P.C. was founded at Newcastle-on-Tyne on September 2, 1863. Professor Bentley's resolution proposing an annual conference was seconded by Professor Attfield.

An exceedingly interesting letter from Dr. Attfield giving some particulars of the formation of the Conference was read at last year's meeting at Bristol. The last paragraph of that letter reads as follows :

> Personally, I much regret to be absent from the gathering, but at the time, and for a few weeks afterwards, I shall be in the hands of a well-known surgeon, who promises such results as will enable me to attend meetings of the Conference for years to come.

His numerous friends were soon afterwards able to congratulate him on a most complete restoration to health and strength. We greatly regret, however, that his hopes, as expressed in the paragraph of which I have quoted, have been doomed to disappointment, as his medical advisers prohibit his return for the present. In a letter to me he says :

> Alas! the keen delight with which I have been looking forward to being present at the approaching Conference at Sheffield, to supporting you, perhaps to saying a word of appreciation of the long and valuable services of Mr. Ransom, and generally to taking part in the business and pleasures of the gathering, must suffer disappointment. I need only refer you to the enclosed copies of letters from my medical advisers.

Still, we have every reason to believe that his indisposition is only of a temporary character, and to hope that we shall soon have the pleasure of seeing him amongst us again.

Obituary.

The circular to which I have referred initiating the Conference had the support of William Bastick and B. S. Proctor, whom I single out because they are those of two gentlemen who have passed away since we met last year. Bastick, in his day, was an ardent pharmaceutical reformer, and no one ranked higher as a practical pharmacist than Proctor. The losses which the Conference and pharmacy have sustained since our last meeting also include Mr. John Barclay, B.Sc., of Birmingham; Mr. James Maurice, of Plymouth; Mr. J. H. Mathews (Hon. Secretary to the 1900 London Local Committee); Mr. John McMillan, of Glasgow; Mr. A. R. Bennet, of Nottingham; Mr. Thos. Whiffen, and Mr. Elias Bremridge, the honoured and venerable ex-Secretary and Registrar of the Pharmaceutical Society.

It is, as I have said, twenty-five years since the Conference met in this city, and then it was under the presidency of a pharmacist whose keen interest in the formation of the Conference I have indicated—the late Mr. Schacht. For reminiscences of the last Sheffield Conference we must look to Mr. Newsholme, the Treasurer of the 1879 Local Committee, and afterwards the remarkably popular President of the Pharmaceutical Society. The pleasurable anticipations of a great many members in connection with this second visit to Sheffield are greatly enhanced by the pleasure of meeting Mr. Newsholme. There are, of course, several others who took an active part in the arrangements, but the President of that committee, Mr. William Ward, unfortunately was removed by death in January last.

We deeply regret that another eminent member of the Conference and resident of Sheffield, Mr. Alfred H. Allen, has just been removed by death. His genial and cheerful presence will be greatly missed. His labours in connection with the Conference were most valuable. From 1871 to 1896 he read no fewer than fifteen papers before the Conference, and these papers were of a most important and practical character. He contributed about two hundred to other scientific societies, and in his great work on "Commercial Organic Analysis" we have a most valuable heritage.

As pharmacists we ought to express our gratitude to one of the most eminent members of the medical profession in this country, Sir John Simon, F.R.S., who has just passed away. The memory of his great services to pharmacy will not readily fade.

THE B.P.C. FORMULARY.

I wish, in the next place, to call your attention to a suggested change of great importance to the Conference, for this year may see the finish of the work of the Unofficial Formulary Committee, which has now been in existence for upwards of eighteen years. I think I should be failing in my duty as the present President of the Conference not to make some reference to the work of that committee; for it has been of very great value to pharmacy, and has at all times been carried out by those pharmacists who have constituted the committee as a labour of love, and without monetary recompense. It is interesting to recall that what appears to be the first suggestion for the publication of such a book was made by Dr. Symes in a paper read by him at the meeting in Swansea in 1880. The formation of an Unofficial Formulary Committee was proposed by the late Mr. Richard Reynolds at the meeting of the Conference in 1886, at Birmingham, who referred to the similar work that had been undertaken for some years by the Pharmaceutical Society of Paris, and I think there is no question that that committee has carried out faithfully the work indicated in the resolution which he moved, which was:

> That in order to secure greater uniformity in composition and strength in non-official remedies, and also to enable the medical profession to prescribe them with definite knowledge of those qualities, and without indicating any particular maker, the Conference undertakes the preparation of a formulary of non-official remedies.

The motion was seconded by Mr. S. R. Atkins, the greatly respected ex-President of the Pharmaceutical Society, who, to our great regret, is unable to be present at this meeting. There was considerable need for such a publication as was suggested. Many years elapsed between the publication of the respective British Pharmacopœias, and at that time there was a tendency to introduce new vegetable drugs which, during their period of probation, came to be prescribed by medical men. Uniformity of the preparation of such drugs thus became desirable. It is with considerable apprehension that one notices to-day that the introduction of new vegetable products is extremely rare, and that the whole tendency of new remedies is in the direction of synthetic chemicals, mostly produced, in consequence of fiscal conditions, in other countries than our own.

At the meeting to which I have referred the very practical resolution of Mr. Reynolds was supported by such able pharmacists as the seconder, Mr. Atkins, Dr. Symes, and the late William Martindale, and one cannot help admiring the unselfishness of the last-named who, although he recognised in this work a serious competitor to his own book, yet endorsed the value of the suggestion, and allowed himself to be appointed as Chairman of the committee. Since the death of Mr. Martindale Mr. Martin has rendered valuable service as Chairman of that committee. The remarks made by the leading pharmacists in this country, and by a Past-President of this Conference, now unfortunately deceased—Mr. Schacht—show plainly that there was a difference of opinion even at that time among the leading pharmacists as to the proper body to compile such a work as an Unofficial Formulary. While Mr. Schacht evidently held the opinion that such a work should be issued by the Pharmaceutical Society, Mr. Martindale thought that in consequence of the relations of the Pharmaceutical Society with the General Medical Council it would be better that the Conference should undertake such a work, being naturally quite unfettered in its action. This difference of opinion may, to a certain extent, be held to have existed up to the present time, and it is because the Council of the Pharmaceutical Society has now decided to issue a "Compendium of Medicines," which will cover a considerable part of the ground formerly traversed by the Formulary Committee, that it has been suggested that the labours of this committee shall cease and its work be absorbed by the parent Society.

The publication of the "Formulary" has led to good-fellowship and united work, and one has only to go through the list of names of those who have given their services to this committee to see that it has been carried out by the leading pharmacists of this country. Not only that, but a considerable part of the British Pharmacopœia Addendum of 1890 included the results of the labours of the committee, and one sees also in the pages of that work and of the Pharmacopœia of 1898 the names of the same pharmacists who have taken part in this important work for the benefit of pharmacy. Although it was at first anticipated that the "Formulary" might be an expense to the Conference, and, indeed, was opposed on that ground by some, who thought that the parent Society could better afford it, it has been a source of income to the Conference rather than an expense. As many as 2,250 copies of the "Unofficial Formulary" were sold in the first twelve months, and a very creditable profit has annually resulted from the sale of that work.

It is on that account, doubtless, that the Council of the Pharmaceutical Society, in modifying the scope of the proposed "Compendium of Medicines," has had in mind that a monetary injustice might be done to the Conference by the absorption of its published formulæ and unpublished work, and it is gratifying that a recompense has been suggested in the form of an honorarium of seventy guineas, to be paid to the funds of the Conference by the Pharmaceutical Society. An opportunity will doubtless be given at this meeting later for discussing the subject; but I venture to hope that you will recognise that I, as your President, have acted as far as possible in the interests of pharmacy in this matter, in conjunction with my friend, Mr. R. A. Robinson, the President of the Pharmaceutical Society. The Council's Compendium Committee and our own Executive Committee have also done their best to arrange a compromise satisfactory to all parties, and one ensuring all loyalty to the parent Society, and, if it be desired, the continued individual help of those who have contributed so much to pharmacy by their labours in connection with the "Formulary" Committee. In the light of the proposed publication of the "Compendium" by the Pharmaceutical Society, the discussions on Dr. Symes's paper in 1880 and on Mr. Reynolds's motion in 1886 are very interesting, and I feel sure that you will all join with me in expressing the hope that the "Compendium" will realise all the hopes of its projectors, and that it will prove of great service to the prescriber and dispenser of medicines.

I feel in the first place that an apology is due to the Conference in that I present no record of the progress of pharmacy during the year. I have, however, felt the necessity of enlarging on the main features of my address of last year in view of its immense importance to the public and to the pharmaceutical calling, being assured that in our "Year-book" and the papers to be read at this meeting we have an adequate indication of the advances that have been made in pharmaceutical research. Turning briefly, however, to recent advances in the

CHEMISTRY OF ESSENTIAL OILS,

a branch in which I am naturally interested, there are two aspects of the subject to which I may just devote a few words. Recent endeavours have been, to a large extent, directed to the production of synthetic bodies properly so called, and of artificially made mixtures of bodies improperly called synthetics. In the first place, no one can seriously deny that the exact balancing of odours manufactured in Nature's laboratory is in general considerably superior to that turned out by art. But there is a tendency —due to ignorance and prejudice—to regard this as due to some inherent quality in natural products which is not present in artificial products. That, of course, is not so at all. Given chemically pure vanillin, for example, there cannot be the faintest difference between samples of natural or artificial origin. If the natural body be contaminated with traces of some other compound, derived from the same natural source, it may truly be superior to pure vanillin— and herein lies the whole explanation of the general superiority of natural over artificial products. Artificial compounds reach, as a rule, a very high standard of chemical purity; the natural products contain traces of bodies which mellow and round off the odour to its best advantage. Let us look at such a body as otto of rose. There is a so-called —but wrongly called—synthetic otto of rose on the market which, in the opinion of all connoisseurs, cannot in the least compare with natural otto. Is it to be wondered at? To get this so-called synthetic otto we mix geraniol, contaminated with other products from citronella oil, with an artificially prepared citronellol and a dash of phenyl-ethyl alcohol and a few other bodies which are known to exist in natural otto. But after this mixture had been on the market for a year or two, a few perfumers having tried it, and still fewer having liked it, two German chemists a month or two ago discovered three new compounds in natural otto of rose. There are the alcohol nerol, the phenol eugenol, and a sesquiterpene alcohol, possibly identical with farnesol. And if these bodies can be obtained from other sources at a price which would allow their use, there is no doubt that other bodies, in small quantities, which have hitherto been overlooked, will again be found in natural otto. Many similar examples could be quoted, but I use this illustration merely to show that the synthetic can only equal the natural after years of careful work and gradual improvement, the natural bodies always starting with a good handicap in their favour. As an example of synthesis, properly so called, I may mention the recently published results of the work of Bouveault and Gourmand, who, by treating ethyl geraniate with sodium, have obtained rhodinol, the characteristic alcohol of oil of roses. The announcement of the synthetic preparation of camphor in America was made so fully and circumstantially in the "Scientific American Supplement," 1903, that it excited great interest; but it was received with some surprise and a good deal of scepticism, which now appears to be justified. When the famine prices of a few months back were prevailing, one expected to see the American article on the market, but so far it still appears to be *in nubibus*, and one hardly knows whether artificial camphor is or is not being manufactured.

Genesis of Essential Oils.

A direction in which a considerable amount of work has again been going on this year is in the study of the influence of external conditions on the characters and composition of the essential oils yielded by plants. This work has mostly been carried on by Charabot and his pupils, and by Jeancard and Satie, but in the latter case the work has been only of a desultory nature as compared with Charabot's more exhaustive researches. The obvious results of such work, if any be achieved at all, must be in the direction of modifying for the better the characters of such natural products as essential oils. But I must confess—as I think I mentioned last year—that I am not convinced by the results published that sufficient has been done even to base the slightest generalisation, such as the learned authors have allowed themselves to lay down. In regard to special work connected with this large subject, I feel I can only skim over the surface and mention a few out of the many researches which have been brought to a successful conclusion this year. In regard to the adulteration question, to which I drew attention last year, I have made careful inquiries, and I am credibly informed that the very gross adulteration of several oils, such as peppermint and citronella oil, has greatly diminished. This is due very largely to the work of Parry, Umney, and Bennett, to whose numerous papers on those two oils I only draw attention. The adulteration of peppermint oil, which reached a maximum towards the end of 1903, has lately been falling off; but sophisticated samples of American oil are still being offered on the London market. Parry and Bennett have recently published a summary of past work, and have separated another admixture, which they believe to be cedarwood oil. Oils which are not soluble in 70-per-cent. alcohol and have a low menthol content cannot be passed as pure without full investigation and comparison with genuine samples. In a series of papers published in The Chemist and Druggist, Parry and Bennett took up a strong position as to the value of Schimmel's test for citronella oil, pointing out that many samples which were not pure passed the test, and that the latter was therefore not to be relied on. This was not at first accepted by Messrs. Schimmel & Co., but in their semi-annual "Report," published in April, 1904, they admit that Russian petroleum may be undetected up to 10 per cent. They have accordingly devised a test for citronella oil, which they called "the raised Schimmel test," which consists in adding 5 per cent. of Russian petroleum to the sample of oil and determining the solubility of the mixture in 80-per-cent. alcohol. No separation should take place if the original oil is pure. The use of Schimmel's test alone is therefore acknowledged to be useless for detecting small proportions of adulterants.

Another English chemist, Spurge, has shown that the German method of determining eugenol in clove oil, elaborated by Thoms, is inaccurate, with the result that Thoms has agreed and modified his process accordingly. J. C. Umney confirms the statement that the specific gravity of English lavender oil increases with age, and notes that the last distillates, although containing a higher percentage of esters, have a decidedly pleasant odour. He points out that the separate collection of the last fraction is justifiable on this account, and that a specific gravity of 0.883 may be taken as a minimum limit for a pure English oil. His observations on the distinct influence of the soil on the character of lavender oil are very interesting. Cajuput oil has been the subject of an article by J. C. Umney, who points out that the specific gravity and content are distinctly lower than those met with a few years ago, and suggests a lowering of the minimum specific-gravity limit in the British Pharmacopœia to 0.919.

A protest against selling lemon oil guaranteed to contain 7 per cent. of citral has been published by Parry, and his opinion that lemon-oil does not normally contain more than 3.5 to 4 per cent. has been supported by Burgess and Child, Chapman, and others, and confirmed by manufacturers of terpeneless oil of lemon, who find it impossible to obtain more than 5 per cent. of flavouring constituents of which only about one-half consists of citral. An exhaustive paper on the determination of aldehydes and ketones in essential oil by the neutral-sulphite process was read by Herbert E. Burgess at the December meeting of the Society of Public Analysts (1903). Special details were given in the paper for the determination of citral in lemon oil; concordant and accurate results were also obtained in the case of carvone, cinnamic aldehyde, benzaldehyde, and in the analysis of caraway, cassia, cinnamon, spearmint, almond, lemongrass, cumin, pennyroyal, and many other oils containing aldehydes and ketones.

Recent Progress.

The physical constants of acetylated sandalwood oils have been published by Parry and Bennett, and also the characters of various fractions of sandal oil distilled under reduced pressure.

Parry and Bennett have found that samples of adulterated spike oils will pass the generally accepted solubility test and propose to reduce the strength of alcohol used in the test from 70 per cent. to 65 per cent., in six volumes of which all pure oils are soluble. The experiments of Von Soden and Taffe appear to prove that the alcohol nerol is present in otto of rose to the extent of 5 to 10 per cent., and that it plays a most important part in the specific perfume of the otto. Hudson Cox and Simmons have determined the iodine-absorption of several samples of pure and adulterated otto of rose, and propose a limit of 187 to 194 for pure oils. Geranium oil and other common adulterants give much higher figures, and it is stated that small proportions can thus easily be detected. Several new odorous bodies of interest have been discovered during the past year, amongst which farnesol, probably one of the most important, is a sesquiterpene alcohol isolated from the essential oil of cassie flowers, and probably detected in otto of rose also. A new sesquiterpene, to which the name of limene has been given, has been discovered in oil of limes and in oil of lemons by Burgess and Page, and Chapman has isolated a light terpene closely resembling myrcene from oil of hops. Power and Lees have also isolated a new ketone, "umbellulone," from the oil of Californian laurel-leaves.

Amongst those oils which have been very fully investigated I may mention pimento, in which many new bodies have been discovered, including cineol, phellandrene, methyl-eugenol, and palmitic acid; lavender oil, in which amyl alcohol and a new ketone have been discovered; patchouli oil, in which benzaldehyde, cinnamic aldehyde, a terpene alcohol, a new ketone, a new base, and several sesquiterpenes have been found; and laurel-leaf oil, in which several fresh constituents have been discovered. There have, I am glad to say, been many other papers published by English chemists on this subject, and in this connection I may say a few words as to suggested alterations in the British Pharmacopœia in this group. All the new editions of other Pharmacopœias which have recently appeared have made distinct progress in this department, and, considering the immense amount of adulteration in essential oils, the Pharmacopœia authorities ought certainly to see that the descriptions and methods of assay are correct and up to date. To mention only quite a few examples which require revision: Under oil of aniseed the congealing-point is given as from 10° to 15°; when scientifically taken this figure is more often than not 15.5°, and just falls outside the B.P. limit. The specific gravity of cajuput oil is fixed too high; that of lavender oil might be slightly modified; otto of rose is described as being derived from *Rosa damascena*, but it is in fact always derived from this and a mixture of white roses in Bulgaria, and from a different rose altogether in some other places. The specific gravity of otto of rose, as given in the B.P., 0.856 to 0.860, is wrong; in most years the proper limits are 0.850 to 0.857, and an otto with a specific gravity 0.960 at 30° is, in nearly all seasons, certainly adulterated. Under balsam of copaiba the characters of oil of copaiba are quite erroneous; the figures for oil of lemon are such that no analyst dare rely on them; under sandalwood oil the santalol content is not given, yet it is agreed by every authority in the world that it should be at least 90 per cent. I think that in the next edition the editors should boldly adopt the latest and most scientific methods for testing these bodies as a means of assisting in reducing adulteration to its lowest limits. I might go on to great length on this subject, dealing with the numerous additions to the literature of the subject, but I have purposely only made allusions to the more important points, and now pass on.

The Metric System.

One of the latest developments in connection with the B.P. is the movement to make the metric system the one legal system in dispensing. It is significant that the columns of the medical journals a short time back were devoted to showing medical men how to write prescriptions in the metric system. We see the matter advanced a stage further by the resolution passed at the last meeting of the General Medical Council, as follows:

> That the President (with the Chairman of the Pharmacopœia Committee) be requested to inform the Lord President of the Privy Council that, in the opinion of the Council, it is desirable that after a sufficient period, to be fixed by law, the metric system of weights and measures should become the one legal system for the preparation and dispensing of drugs and medicines; that the Council would view with favour the passing into law of a Bill such as that now before Parliament entitled the Weights and Measures (Metric System) Bill; and that in that event the Council would be prepared to take all necessary steps to give effect to the law by making the proper modifications in the British Pharmacopœia.

In order to minimise the inconvenience that must follow the enforcement of the metric system it behoves us all to make ourselves familiar with its details. In the drug-trade there are gentlemen who have systematically endeavoured to infuse the principles of the scheme into their employés, and recently at the sports of a well-known pharmaceutical concern all the distances were arranged by the firm on the metric system. It is to be hoped that all quantities in the Pharmaceutical Society's proposed "Compendium of Medicines" will be given in terms of a decimal or metric system. Pharmacists must maintain their position in the vanguard of progress.

Pharmacy Legislation.

Although the introducer and supporters of the Pharmacy Bill have failed to obtain a hearing in the House of Commons this year, the present Session has been, as pointed out recently by Mr. Pilkington Sargeant in the "Pharmaceutical Journal," one of almost unprecedented activity among chemists, both individually and collectively. The necessity for more active co-operation in order to obtain a more drastic enforcement of the intention of the Pharmacy Act, 1868, has been more fully realised. A large number of members of Parliament, after acquainting themselves with the facts of the case, have expressed the opinion that the House of Lords decision in the London and Provincial Supply Association case was contrary to the original intention of Parliament, and that, being unjust, it was a perversion of law. They have also realised that the present state of the law is contrary to public policy. As you are aware, one of the chief objects of the Pharmacy Bill is to restore in some degree the principle of qualified ownership, to ensure that the sale of poisons and the dispensing of prescriptions should not be conducted otherwise than under the direct and absolute control of responsible men, whose experience and education had been guaranteed by examinaiton. The chemist-servant of a company has not by any means a free hand. He may at times make a timid suggestion, but it is the director who controls the procedure. The opinion of the qualified servitor is generally neither sought nor welcomed when volunteered. The education of the financially responsible vendor or director is the only safe foundation for poison-legislation. The recklessness and audacity with which the agitation against the Pharmacy Bill has been conducted, and the manner in which it has been fostered by a few prominent dealers in proprietary poisons, has forced on chemists the necessity of united effort, not only for the preservation of their own status, but also for the protection of the public and the guidance of legislators. As an illustration of the way in which the intentions of the Legislature were being frustated, and the manner in which some of these companies formed for the purpose of evading the law, discredited the legitimate chemist in the eyes of the public, I instanced at the dinner of the London Chemists' Association the case of a girl who had been employed for some time by a limited company to pack seidlitz powders, and to put up for sale other things in regular demand, and who recently formed a company in a town on the south coast, opened a "chemist's" shop, and adopted some very novel but rather questionable methods of selling drugs. One of these methods was to send out broadcast requests that clergymen should send in the names of sufferers from gout. An honorarium of 20s. on all orders received from such recommendations or introductions was promised. The exposure of this little enterprise gave the Pharmaceutical Society an opportunity of pointing out in the lay Press that the company could not be classed as qualified chemists, and the matter was the subject of a letter to the "Times" by Sir Edward Fry.

In The Chemist and Druggist of July 2 figures were given of companies connected with the drug-trade showing that the registration of such companies is going on at a rapidly increasing rate, and that journal goes on to remark:

> Allowing for all these, we are within the mark in saying that 1,000 out of the 1,328 companies were formed by persons who are not chemists and druggists by examination; many of them have been grocers or similar storekeepers, and they have adopted the company principle in order to make themselves right according to the law as interpreted by the House of Lords in 1881.

I have had taken out the particulars of all the companies registered with the object of carrying on, *inter alia*, the business of chemists and druggists during the year 1903, and although it is difficult to give proof it appears perfectly clear that by far the larger number of these were registered with small capital, with a clear intention of evading the restrictions as to qualification, etc., imposed on "persons" in connection with carrying on business. The same remarks apply to retail drug-companies registered in 1902 and 1901, which I have also had abstracted.

The opponents of the principle of qualified ownership have been very active in trying to impress members of the Legislature with the idea that the Pharmaceutical Society is inviting Parliament to create a monopoly for registered chemists. That the principle underlying the Society's proposals is in the public interest, instead of the interest of registered chemists, has been shown in an able letter addressed by Mr. W. Watson-Will, Secretary of the Federation of Local Pharmaceutical Associations, to members of the House of Commons. In this connection Mr. Watson-Will presented a copy of the remarks of the Lord Chancellor when withdrawing from the Companies Bill of 1899 a clause dealing with the question of company pharmacy. These observations of the Earl of Halsbury were at this point quoted from Hansard.

In South Africa.

Of importance in this connection is the recent Ordinance of the Orange River Colony prohibiting a firm, co-partnership, or company from dealing in poisons or compounding prescriptions unless the business be managed by one or more partners or directors, all of whom are registered chemists, sleeping partners or directors not being deemed to manage a business. We know from the mouth of the Prime Minister that this Ordinance has been under the consideration of heads of departments in connection with the proposed Government Bill amending the Pharmacy Act. There is great significance in the approval of this Ordinance communicated to the Secretary of State by the General Medical Council through its Executive Committee.

The draft Ordinance, which has still more recently been introduced into the Legislative Council of the Transvaal, provides not only for the qualification of all the directors of a limited company carrying on the business of a chemist, for the management of every place of business, owned by a company, by a qualified person whose name must be conspicuously posted in such shop, and for the full protection of titles; but also for the establishment of a Pharmacy Board to have charge of pharmaceutical matters, with disciplinary powers to erase from the register persons guilty of improper conduct.

As having an important bearing on this matter, I may quote

The General Medical Council's Important Action

at its last session in regard to professional companies, when it was resolved, on the motion of Sir Chas. Ball, seconded by Mr. Tichborne :

> 1. That copies of the judgments in the cases "O'Duffy *v.* Jaffe, Surgeon-Dentists (Limited)," and "The King (Rowell) *v.* Registrar of Joint-stock Companies," together with the following resolutions of the General Medical Council, be sent to the Lord President of the Privy Council for his information.
>
> 2. That, in view of the judgment of Chief Baron Palles, the General Medical Council hope that the Government will take such steps as may be necessary—(*a*) to restrain the Registrar of Joint-stock Companies from registering any new company unlawfully using the term dentist, or any similar title which would be likely to lead the public to believe that the members of such company were registered dentists when such is not the case; (*b*) to prevent companies already registered from continuing unlawfully to use the term dentist or any similar title which would be likely to lead the public to believe that the members of such company were registered dentists when such is not the case; (*c*) to in like manner prevent the use by companies of unlawful titles which would be likely to lead the public to believe that the members of such companies were registered medical practitioners when such is not the case.

The cases specified above—Sir John Batty Tuke has since moved in Parliament for a return showing the number and names of companies registered to carry on dental and medical practice—have a direct bearing on the movement of the Pharmaceutical Society. "O'Duffy *v.* Jaffe, Surgeon-Dentists (Limited)," was an action brought on behalf of the Irish branch of the British Dental Association against Marcus L. Jaffe and Jaffe, Surgeon-Dentists (Limited), registered under the Companies Act, and carrying on business at Limerick. Marcus Jaffe was a director of the company. They were summoned for that they carried on dental operations although not registered under Section 3 of the Dentists Act, 1878, and that they had no right to use the titles which they had adopted. It was contended for the prosecution that the company was formed to evade the Act; for the defence, that neither the company nor the individual director was liable. The Magistrates dismissed the summons, holding that the defendants were not liable under the Dentists Act, and the King's Bench Division, Dublin, upheld the view of the Magistrates. The Lord Chief Baron was of opinion that the word "person" in Section 3 was confined to natural persons. His Lordship even quoted observations by Lord Blackburn and Lord Selborne in the pharmacy case in support of his decision. And, turning to the actual wording of Section 3, which read, "Any person who not being registered under this Act, takes or uses any such name, title, addition, or description," he said that referred to a natural person, who had his own name, and added to it another name or description, but did not include a company, which added nothing to its name. The High Court decision in this case places dentists on exactly the same footing as chemists with regard to their titles, and to this extent it may, in the long run, turn out advantageously to the craft as augmenting the forces arrayed against company exploitation of professional and semi-professional callings.

In the case of S. G. Rowell, Dentist (Limited), the Registrar of Joint-stock Companies had refused to register a company under that name, and the King's Bench Court, Dublin, on an application for a mandamus to compel registration, unanimously upheld the refusal on the ground that the registration would involve a false representation, and was not, therefore, a lawful purpose. Of course, the decision does not affect the right of a company to carry on the business of dentist or chemist, but it is an important one, and bears closely on what is known as the "protection of titles."

In England we have had recently a case which is distinctly noteworthy. John Panhans was charged by the British Dental Association with using a description wrongly implying that he was a person specially qualified to practise dentistry. The offences were created by advertisements under the style of the Dental Institute (Limited), of which defendant was the managing director. For the defence it was contended that the advertisements were inserted by the company, which could not be "a person specially qualified to practise dentistry." The Magistrate said it was clear the defendant was the sole director of the company, and that he was the only person who practised dentistry on the company's premises. He quite agreed with the contention that a company could not be a person properly qualified to practise dentistry, and it was no doubt for the purpose of evading the Act that the defendant registered the company. In his opinion such a procedure was clearly within the mischief aimed at by the Legislature, and he accordingly fined the defendant. In bringing the issue to a head these cases are obviously helpful. It is to be hoped that there will be no differentiation in treatment in regard to medical and pharmaceutical companies respectively. It is with this in view that I have cited the action of the General Medical Council in regard to dental cases, and I may also mention in this connection the approval of the Pharmacy Bill by the medical authorities as pointing in the desired direction.

The Position of Poison-legislation.

Nothing has happened in the Legislature since last I addressed you to overcome the contention of all experts—a contention prompted by knowledge of the dangers connected with the sale of sheep-dips and insecticides—that these articles may be kept out of the hands of the unqualified, untrained retailer. I hinted last year at the origin of the Privy Council Committee and the purpose it was intended to fulfil, and it is sincerely to be hoped, in the public interest, that the Government will not free the sale of poisons for use in agriculture and horticulture from the present restrictions. The consequences would be disastrous, and, in these days when the procuring of legislation is so difficult, not readily repairable. Grave reasons for not disturbing the present conditions—reasons which we all earnestly hope, in the interest of public safety, will carry full weight with the Government departments—have been placed before the Lord President of the Council by the British Medical Association. That Council, in a memorial, expressed the grave misgiving with which those who are aware in the course of their professional duties of the dangers attending the retail sale of poisons in general, and especially in the case of arsenic and carbolic acid, must regard any violation of the salutary principle that those who retail poisons should have their practical knowledge proved by examination. Surprise was expressed in this memorial that no grounds were given in the report of the Committee for arriving at the conclusion that the provisions of the Pharmacy Act could be relaxed without undue risk to human life; and the fact was emphasised that the evidence demonstrated the manner in which the technical training under the present law operates for the protection of the public. The agitation for free poisons in agriculture and horticulture continues with unabated vigour in a comparatively narrow circle, so far as its participants are concerned. It has extended to Ireland also, in consequence of prosecutions at Ballinasloe and elsewhere, but the Pharmaceutical Society of Ireland has checked at their fountain some of the false statements as to absence of facility for farmers obtaining these substances.

There is just this one point I should like to make on this occasion. The anti-restrictionists have urged that chemists are unable to recommend for the horticulturists or agriculturists remedies suitable as germicides, insecticides, and sheep-dips. The statement is absurd, and one which may be used with great disadvantage to those who were responsible for it, for not only can a chemist devise effective formulæ for plant and animal diseases, but his long experience in the protection of the public leads him, in the selection of his agents, to those of a non-poisonous character. That the desirability of a choice in that direction is recognised by leading authorities can be indicated by reference to some of the standard works. For instance, Mr. George Armitage, M.R.C.V.S., formerly lecturer in the Albert and Glasgow Veterinary Colleges, in his book, "The Sheep Doctor," refers to arsenical poisoning as the result of the use of solutions of the metal for the purpose of

Sheep-dipping.

> As long as the skin is uninjured the solution will be inoperative, but wounds of all kinds favour rapid absorption, and the effects are developed within a short time. Then, again, poisoning arises—and this is the more common—from the dripping of the sheep on the grazing pastures after arsenical solutions have been used, the grass and herbage generally being impregnated with the poison.

Mr. Armitage also states in his chapter on remedies employed in dipping or dressing sheep infested with parasites that

> The attention of scientific men has not been directed sufficiently to the destruction of parasites causing skin-diseases among animals, particularly sheep; and, except in the recommendations, to use the pernicious preparations of arsenic, corrosive sublimate, etc., it may be said nothing of consequence has been done. The cost of remedies militates greatly against the adoption of many that might prove serviceable, and even the difference of a few pence between an unsafe arsenical or mercurial preparation and a safe, non-poisonous dip is too frequently held as a reason for using the former. We have known farmers use such poisonous preparations, paying at the rate of 6*s.* per hundred sheep, to the great detriment of the wool, pounds being wasted at clipping times; when their neighbours, using the non-poisonous dips, which have cost 10*s.* per hundred sheep, have sold their clip for quite as much more as was gained in the other case. . . . Arsenical preparations, notwithstanding all that can be asserted by means of extensive advertising, fail to destroy the parasites effectively or prevent the attack of the fly.

That poisonous preparations are not essential in the treatment of plant-diseases caused by parasitic fungi is shown by the observation of Mr. George Massee, F.L.S., principal assistant of the Royal Herbarium, Kew, who says that from among the numerous solutions of powders that have been experimented with the following have proved most effective: (1) Bordeaux mixture, (2) ammoniacal solution of copper carbonate, (3) liver of sulphur, (4) solution of iron sulphate, (5) solution of potassium permanganate, (6) paraffin, formalin, lysol, (7) sulphur (powdered), (8) quicklime (powdered).

On the high authority of Professor B. T. Galloway, of the U.S. Department of Agriculture, the formula for 50 gals. of Bordeaux mixture is:

Water	50 gals.
Copper sulphate	6 lbs.
Unslaked lime...	4 lbs.

The adhesive properties can be increased by adding soft soap in quantity equal to that of the copper sulphate. It is also advisable to dilute the mixture for spring spraying, and where appearances can be ignored it is the most effective and cheapest fungicide that can be used. I may also mention as most interesting, in view of the dangerous treatment of some plant-diseases by fumigation with hydrocyanic acid, that Mr. H. Marshall Ward, F.R.S., Professor of Botany at Cambridge University, in his book, "Diseases in Plants," says that phylloxera has been treated by plunging into the soil, near the roots, small blocks of some slowly soluble medium, such as gelatin impregnated with carbon bisulphide, the volatile fumes of which kill the insect.

I have found carbon bisulphide to be a most effective ant-destroyer, and a safe exterminator of wasps in their nests. I am informed that this was also found to be the best remedy for the rabbit-pest in Australia until this so-called pest was found to be a source of profit. Emulsions of kerosene and turpentine are the most effectual remedies for many kinds of "blight" on fruit-trees. Many further illustrations could be given. Research in this direction is full of promise and a matter of national importance. I commend it to you as well worth your attention.

Death-certification.

Last year I quoted from the report of the Select Committee on Death-certification that: "So far as affording a record of the true cause of death and the detection of it in cases where death may have been due to violence, poison, or criminal neglect is concerned, the class of certified deaths leaves much to be desired." Since that time several cases have occurred illustrative of the correctness of these statements. Two cases of poisoning by arsenic have occurred this year, but in neither case was poisoning suspected by the medical attendant or the giver of the certificate, and the suspicion resulting in inquiry was only aroused by circumstances relating to property after the burial of the bodies. The Report of the Royal Commission on Arsenical Poisoning made several recommendations as to the part which should be played by the State with regard to the public health and safety, but when Mr. MacVeagh, M.P., asked the Prime Minister in the House of Commons on Monday, July 25, last whether his attention had been called to the recommendation of the appointment of a special officer with suitable scientific knowledge and adequate laboratory assistance to make authoritative investigation when new risks to health were suspected, the Prime Minister was unable to say more than that the subject was under consideration. The "Lancet" stated that the "distribution of poisons in any promiscuous manner brings the questions of death-certification and the disposal of the dead prominently before us."

While the Conference was sitting last year a woman was sentenced at Swansea for obtaining money from an insurance company by false pretences. She had obtained a certificate of her child's death from a doctor, although the child had not died. The doctor had seen the child when ill, but had taken the mother's word as to its death, and he assured the Judge that it was the universal thing to give a certificate in such circumstances in the absence of any suspicion. The result of a local newspaper's inquiry among members of the British Medical Association (at the time meeting in the town) was that the doctor was justified in his action. This instances the weakness of the present regulations governing death-certificates. In this connection I may mention that the London County Council through its Public Control Committee has kept the subject of death-certification before the public. It has not been possible for the Council to introduce a Bill, however, as any legislation must be by a general Act applicable to the whole country.

In connection with the metropolitan borough of St. Pancras I have had forcibly brought under my notice as mayor this year the insufficiency of our present laws as to death-certification. The Borough Council are large cemetery-owners, and recently the London County Council called attention to the case of a child who had died without having been seen by a doctor within a fortnight of death, and was buried at the cemetery without the production of a certificate of registration, a certificate of death produced at the funeral being accepted as sufficient authority to bury the child. The County Council stated that it was informed this was not an infrequent practice, and having in view the great danger involved, it had brought the matter to the notice of the Borough Council, and asked for an opinion on the points raised. As I indicated in my address last year, the law does not require either notification or registration as a condition precedent to burial or disposal of a body. It merely requires that the cemetery officials shall, subject to a penalty of 10*l.*, give notice in writing to the Registrar of the district in which the death took place in cases in which a registrar's certificate or coroner's order for burial has not been produced. In the case referred to this was done on the day following the funeral, and no further responsibility rested on the St. Pancras Council. With reference to the statement of the County Council that the incident referred to is not an uncommon practice, it may be remarked that out of 2,000 interments at St. Pancras Cemetery during the six months ended January 31 last, only sixteen cases occurred in which no certificate was delivered, which is far below the average for England and Wales, having regard to an answer to a question in the House of Commons that out of 670,000 interments during twelve months, 10,000 took place without burial-certificates. The report of the Chairman of the Baths and Cemetery Committee of the Borough Council remarks that

> whilst being satisfied that so far as the council are concerned, all burials at the cemetery are carried out with careful regard to the law, the opinion was expressed that a more effective system of death-certification is requisite, and the County Council were urged to petition the Government to bring in a Bill for that purpose in accordance with the Select Committee's report on death-certification; and it was also suggested that all death-certificates should be forwarded direct by medical practitioners to the Registrar, and by him to the cemetery authorities, instead of being handed to relatives of the deceased.

The Separation of Dispensing from Prescribing.

It will be recollected that last year I urged that the dispensing of prescriptions should not be a function of medical men, but that it was necessary for the safety of the public that the prescribing and dispensing of medicines should be performed by separate individuals, the one specially qualified in diagnosis and prescribing, the other specially qualified in pharmacy. In the elaboration of this contention I pointed at some considerable length to—

(1) The absence of any check on the accuracy of the dispensing doctor, greater safety to the public being ensured when, by the passage of a prescription, the doctor and the chemist act as a check on one another.

(2) Mistakes which had occurred in connection with doctors dispensing. Those were either (*a*) the effect of inadequate training or a confusion of mental processes consequent on the exacting nature of the medical man's duties in diagnosing the disease and determining the remedy, or (*b*) the outcome of employing unqualified dispensers, or (*c*) the result of the regulations as to keeping, dispensing, and selling of poisons, which are binding on chemists, not being compulsory in regard to doctors' surgeries.

(3) The impunity with which the criminal poisoner is enabled to carry on his or her operations.

(4) The very slight protection to the public afforded by the present system of death-certification.

Nearly forty years ago, Sir John Simon, in giving evidence as Medical Officer of the Privy Council before a Select Committee of the House of Commons, expressed his strong belief in the necessity for the restriction of the sale of poisons and the dispensing of physicians' prescriptions to persons qualified by examination. The question of the proposed compulsory separation of dispensing from prescribing has come more prominently to the front since I put forward the above statements, and I feel that the discussions have brought nearer a more proper understanding between doctors and chemists. The medical Press received the suggestions very favourably on the whole, although strong dissent was expressed in some cases. The public Press gave very sympathetic consideration, but as I feel that the importance of the matter is not properly appreciated, I trust that you will excuse my returning to it.

When addressing the Conference at Bristol I gave lists of mistakes in dispensing in doctors' surgeries, chemists' shops, and public institutions, and from the consideration of those cases the deduction was clear that greatest safety was given to the public by medicines being dispensed in chemists' shops, the proportion of fatal mistakes in doctors' surgeries and institutions being not only much greater, but evidently due to the absence of systematic arrangements existing and imposed by law in chemists' dispensaries as compared with those in doctors' surgeries and public institutions. It is not necessary for me to dwell on all the events of the past year which support my contentions, but it is necessary that I should refer to some of them, although I may be charged again with telling "gruesome tales."

In September, 1903, at a Hackney inquest on a child fourteen days old, it was stated that the father was given at the doctor's surgery, medicine for the child labelled "One tablespoonful to be taken every two hours." The nurse declined to administer so large a quantity to so young a child, and sent the father back, when the doctor admitted that he ought to have labelled it "One teaspoonful." In evidence the doctor accounted for the mistake by saying that he was in the middle of his surgery-work at the time. In this we have a case, which is only one of many that could be cited in establishing the fact that the doctor's other duties seriously interfere with the proper discharge of his function as a dispenser. Then, again, take a certain inquest in Lancashire in June last. A man was found to have died from an overdose of morphine, and the jury expressed the opinion that the doctor who supplied the sleeping-draught causing the death had been careless, and he was censured by the Coroner. The instances enumerated last year show that this is no isolated instance of carelessness. They suggest that some doctors regard dispensing as a "perfunctory formality," and it does not seem the proper thing that men who entertain such a view and men whose training in pharmacy is admittedly inadequate should be entrusted with so important a function, and yet be the only parties entitled to sign a death-certificate.

A recent inquest at Cambridge elicited that a doctor's poisonous liniment was in a similar bottle to the medicine he supplied, and that the former had been mistaken for the latter with fatal results. This, of course, is only typical of the cause of a number of accidents through the absence of compulsory regulations regarding the dispensing, etc., of poisons. The rules of the Pharmaceutical Society, framed in accordance with the Pharmacy Act, provide that chemists must (1) keep poisons in bottles with a distinctive mark indicating that they contain poisons ; (2) store poisons on one of three special systems designed to distinguish the poison-bottles from others ; and (3) send out liniments, embrocations, and lotions containing poisons in bottles distinguishable by touch, and with a label that the contents are not to be taken internally. That the risk of accidents would be considerably minimised were similar regulations binding on doctors' "closed" surgeries can hardly be gainsaid in view of the many sad mishaps enumerated by me last year. I think the desirability of this cannot be too strongly emphasised, and I am glad to see that the "Lancet" has, since my address, characterised the regulations of the Pharmaceutical Society as "useful and clear," and has commended them in the following terms :

> These regulations do not affect medical men or public institutions, but the many stories of tragic accident with which we are all familiar should convince anyone who ever dispenses poisons, and may need convincing of what is obvious, of the urgent need for mechanical reminders of the dangers which attend this work. These methodical ways are necessary to counteract the element of human forgetfulness or human negligence which cannot be eliminated where men sometimes with brains overtaxed with work are employed.

It is an anomaly that chemists' dispensing should be governed by certain regulations, but that a doctor should be free to carry on the important function of dispensing in whatever fashion he may please. As you are aware, I go further, and say that not only should regulations as to the dispensing and storage of poisons be applied to the dispensing carried on at doctors' surgeries and all other places and institutions where medicine is dispensed, but that dispensing should be performed not by the medical man, but by a qualified chemist. The present system is dangerous to the public, and, in order that there may be reciprocal reform in the ranks of pharmacy, I think prescribing by chemists should be abandoned. It may be within your knowledge that the draft Medical Acts Amendment Bill now before the British Medical Association aims at checking the prescribing chemist. It appears, therefore, as a rather one-sided arrangement that many members of the Association should be averse from changing the law as to dispensing in a manner that would conserve it to the pharmaceutical calling, and yet be anxious that Parliament should step in to prevent counter-prescribing, especially when it is borne in mind that death-certification by the doctor is a check on the mistake of a chemist, whilst there is no such check on the mistake of a doctor. There is, of course, a large section of the profession that would welcome the reform I advocate, but, judging from discussions, there are many who would not enter into a voluntary local arrangement, let alone approve of any legislative interference. However, I believe that, although the time is not yet ripe for an appeal to Parliament, we should keep the matter well in the sphere of medico-pharmaceutico-politics, as changes are apparent in the medical profession which, I think, will react in our favour. Neither ourselves nor medical men have said the final words on the matter yet, and I live in the best hope that some good will come of our consideration of the matter here.

There have been two meetings of doctors in the Metropolis which have had a bearing—not, perhaps, of the first importance, however—on the subject. I cannot say that these meetings were assisted in a temperate, impartial discussion of the question by the organ of the British Medical Association, which seemed to urge that, while the writing of prescriptions should be based on a sound knowledge of pharmacy, the dispensing of them should be undertaken by persons whose practical experience in dispensing is of the most elementary kind. This journal's idea of "dispensing" scarcely did it credit. "Given a prescription," it said, "which is capable of being read, nothing is easier than to measure out the desired quantities, and mistakes of a character likely to lead the dispensers into the presence of coroners' juries can occur only through the grossest carelessness, such as no amount of instruction or tuition would prevent."

It is dispensing of that kind that is the inevitable sequence of the lack of adequate

Pharmaceutical Instruction at our Medical Schools,

and it is the kind which we should like to see abolished because we do not think it gives the best service to the public. It is the "bottle-filling" kind of dispensing, and implies stereotyped prescribing, departure from which courts accident. But this journal acknowledges that many medical men would be glad to be relieved of dispensing were there any convenient substitute for it. One must be forgiven a sigh in asking whether the chemist is not a convenient substitute. However, in contrast, we may consider the comment of the "Lancet" on the last presidential address, and read that "the best result may be arrived at by each fulfilling the duty for which his practice prepares him."

The Central Division of the Metropolitan Counties Branch of the British Medical Association has this year had a proposal (referred to above) under discussion by which it was proposed to amend the draft Medical Bill prepared by the Medico-Political Committee of the Association so as to prohibit any registered medical man from dispensing or supplying drugs or other medicaments to anyone. A heavy penalty was named, and exceptions enumerated covering army and ships' doctors, emergency medicines in treatment and districts where both a doctor and a chemist could not be supported. These are, I would ask you to note, proposals *voluntarily brought forward from the ranks of the medical profession.* Although discussion on the additions to the Bill (which were not agreed to) showed a not inconsiderable measure of antagonism to the proposals, there were, most certainly, not lacking signs of a body of opinion in the profession favourable to the separation of pharmacy from medicine wherever practicable. As a concrete example, let me refer to the most recent additions to the correspondence on the subject in the medical journals. A Montgomery medical man wrote to the "Lancet" against the separation of dispensing from medical practice, urging as an argument that he had been unable to procure from the nearest chemists one or two more or less out-of-the-way articles. The answer to him is that supply follows demand, and this answer has been given by a London suburban doctor, who admits that

> Many drug-shops are not so fully stocked with all the requisites of treatment as they should be. The reason is clear; so long as medical men continue to dispense, demands upon the druggist will be comparatively few. Let them cease dispensing and they will allow an expansion of trade which will ensure that the druggist maintains a supply adequate to the needs of his customers. The prices quoted by your correspondent must be extreme in any place. In this part of London 1*s.* is about the usual charge for dispensing a prescription. I think there can be very little doubt that the educated druggist of to-day is as a rule what he certainly ought to be—the fittest person to carry out that work of dispensing for which he has been carefully and expressly instructed.

Reform in Public Dispensing.

In the realm of institution-dispensing there have during the year been important developments. Public bodies like the London County Council and the Prison Commissioners (both of whom insist on their dispensers holding at least the Minor qualification of the Pharmaceutical Society) have given some financial recognition of their dispensing officers' services by increasing their rate of remuneration, and in the case of the L.C.C. by granting the distinctive title of "dispensing chemist." But—and I would gladly draw the veil over the calamity to which I am going to refer—there has been a terrible dispensing accident in an institution where there was no official dispenser, as such, and the dispensing was in the hands of the medical officers. Four lunatics were poisoned. The dispensary arrangements appeared to be loose, the head attendant being allowed to dispense under the supervision of the medical officers. The jury added to a verdict of "Misadventure" a rider that the dispensing should in future be performed by a fully qualified person. Sir Albert Rollit mentioned this sad affair in the House of Commons, asking the President of the Local Government Board what steps would be taken to carry the rider into effect, and—more important still—whether the Local Government Board would cause regulations to be made requiring all dispensaries in public institutions to be in charge of persons registered under the Pharmacy Acts. From the answer it could only be gathered that communications were taking place between the Board and the Lunacy Commissioners. The Public Dispensers' Association has also taken the matter in hand by petitioning the Local Government Board, praying that only qualified chemists should be appointed, and the Dispensers Committee of the Pharmaceutical Society is collecting information which I trust will lead to early action, with good results. I may add that the disaster at the Portsmouth Asylum more than ever emphasises the desirability of regulations similar to those of the Pharmaceutical Society regarding the keeping, storage, and dispensing of poisons being binding in all places where the work of dispensing is done. Dispensing in the Army is still conducted in a very unsatisfactory manner, and among the numerous schemes of Army reform which have been put forward, nothing has been done or even suggested to place the system of "compounding" on a safe and proper footing.

The Repetition of Prescriptions.

Another phase of the dispensing difficulty has been considered by doctors. A movement was initiated in the medical journals by a discussion on the repetition of prescriptions, it being suggested that prescriptions should be endorsed with such terms as "not to be repeated." Arising from this correspondence a meeting was held this year by the Wandsworth Division of the British Medical Association, when it was resolved—

> That, with the view of checking the indiscriminate dispensing of dangerous drugs, the Central Council of this Association be requested to appoint a committee to investigate the subject of the repetition of prescriptions either alone or in conjunction with the Pharmaceutical Society, and to report what steps should be taken to remedy the present grave defect of the law.

And the Medico-Political Committee of the Association has recommended certain proposals which have been adopted by the Council of the Association, viz :

1. That the prescriber should state on the prescription that "This prescription shall be dispensed   times only."
2. That it should be made the duty of the dispenser to stamp each prescription, every time that it is dispensed, with the date of such dispensing.
3. That in every case in which a prescription shall, as shown by the date stamped thereon in accordance with the foregoing recommendation, have already been dispensed for the number of times indicated by the prescriber, and in every case in which the period indicated by the prescriber for the repetition shall have expired, it should be the duty of every qualified dispenser to whom such a prescription may be submitted for dispensing to refuse to dispense the same.

In the opinion of the committee it would only be possible to carry out the foregoing recommendations by alteration of existing legislation. I observe that the Council of the Association has appointed Sir Victor Horsley, Dr. Greenwood, Dr. Heron, and Mr. Messiter as a committee to confer with representatives of the Pharmaceutical Society, and I am glad to know that a conference has been arranged. For myself, I feel doubtful of the practicability of effecting by legislation any improvement of the kind suggested. Chemists are always willing to follow the directions on a prescription if they are clearly expressed, and I cannot help thinking that medical men might safely trust to the honesty, the sense of responsibility, and the discretion which nearly every qualified chemist possesses and is frequently called upon to exercise, rather than to attempt to pass into law a provision which is doubtfully practicable. Another matter of interest to which allusion might be made is that at the representative meeting of the British Medical Association at Oxford last month a resolution was agreed to requesting the Central Council to draw the attention of the medical profession individually to the fact that by recommending certain drugs and certain preparations of those drugs by names of proprietors they are not only allowing themselves to be used indirectly as touts for wholesale druggists, but are also helping their patients to form serious habits of drug abuse.

In conclusion, I desire to express my deep-felt conviction of the necessity of the chemist receiving such a general education as will enable him at any time, if he so desires, to proceed to the ranks of such allied callings as those of analytical chemistry and medicine, and to feel always that he stands on the same plane of intelligence and culture as members of those professions. Throughout my life I have felt that I could have discharged my work and my duties with much greater efficiency had I received a better fundamental education.

It also seems to me that we can best extract respect from the medical profession not only when we prove that we have exceptional knowledge in our own branch, but also when our students have a clear road to become medical men themselves. Preliminary education for pharmacists must be on as high a standard as that of the higher branches of the profession. Education is one of the greatest aids in effecting the reforms in medical practice which I have advocated above. And in regard to these reforms I have endeavoured to show that we do not wish to usurp the rights of medical men. Rather we desire to respect those rights, believing that by so doing we shall secure our own rights, which are only those rights that are necessary for the safety of the public.

Vote of Thanks.

Mr. R. A. Robinson said: I am sure it will be the wish of this large and influential Conference that our best thanks should be accorded to you, Mr. President, for your admirable and reasoned address. (Hear, hear.) I have much pleasure in moving that our hearty thanks be given to you. (Applause.) It is, of course, impossible for me to deal with all the important topics which you have dealt with, but there are one or two to which I should like to refer. I will, if I may, take the President's last point first, as to the repetition of a prescription a number of times. This is a matter to be arranged between the doctor and his patient. ("Hear, hear," and applause.) If the doctor wishes the patient to take the medicine for a certain time, then he must tell him the number of times the prescription is to be dispensed. It is not for the chemist to say how many times he will dispense the medicine, and the chemist cannot be put under a penal clause—this is impossible. (Applause.) One or two of the medical profession have said to me that it is most important that medicine should not be taken an indefinite number of times, but this is a matter between the patient and the doctor, and the chemist will conscientiously carry out the wishes of the medical man so far as he is able. (Hear, hear.) There are one or two points in the full review given to us by the President which I wish to emphasise. It is well known to us all here that the present law is unfair to the individual qualified man, and everyone knows the efforts that have been made to put the matter right; we must try to get it put right as far as we can. It is essential and important that we should not be subject to the unfair competition to which we are subject under the present law, and it is most important that we should get the law altered. The President's remarks on death-certificates made me creep with horror, and I feel inclined to say that I shall certainly refuse to be buried myself without a certificate. (Laughter.) There is another important point—the question of non-poisonous insectitudes, if it be true that these are as numerous as poisonous insecticides. At present the Government does not know that. I have impressed upon the President of the Board of Agriculture; I have shown him the list of non-poisonous insecticides, but it cannot be proved exactly that the evidence is not strongly in favour of the view that the poisonous ones hold the field. If you can set investigators to work, and show that there are as many non-poisonous as poisonous, you will have done good work. As to the Formulary Committee, from the moment the Pharmaceutical Society decided to bring out a Compendium of Medicine, members of the Conference Committee said at once that they agreed with the proposal, but thought it might be unfair to the Formulary Committee. They said at once to the responsible advisers of the Society, "Don't you think you should make some acknowledgment to the members of the Committee?" and at once the Council said, "Yes." I cannot see any cause for disagreement. The President and myself did not find any difficulty in coming to a just conclusion, and I hope it will be thought by the members of the Conference that the Council has done its duty in having resolved to bring out a "Compendium." Having decided to do so I was authorised on behalf of the Council to agree with the President of the Conference that you should have some honorarium or fee, that we should acquire the rights of the "Formulary," and that in future the "Formulary" shall be done by the Council of the Society. I desire to emphasise the pleasant relations which have always existed between the Council and the Conference. I was present at the meeting here twenty-five years ago. The President of that meeting was Mr. Schacht, and he was Vice-President of the Pharmaceutical Society. A predecessor of mine, Mr. Sandford, was the mover of the vote of thanks to him, and he was at the moment the President of the Pharmaceutical Society, so that you will see how history repeats itself even in the small affairs of a society like this. We are much indebted to our President for his labours, and we shall read his paper with much interest, and I for one shall hope that much benefit will result from the Conference under the Presidency of Mr. Idris. (Applause.)

Mr. W. L. Currie: I feel peculiarly pleased that I have been afforded an opportunity of seconding the vote of thanks so ably proposed by my colleague, Mr. Robinson, to the President for his able address. A few weeks ago I met Mr. Idris in the Lobby of the House of Commons, and I had the temerity to ask him what he was going to speak upon at the Conference. He said he was not sure, but certainly he had done nothing at that time towards that important object. To-day, after a lapse of about four weeks, I have heard what he has committed to paper, and you will agree that he has given us a valuable contribution to pharmacy. In speaking upon that important point, prescribing and dispensing, you will agree that we cannot too greatly accentuate his remarks on that subject, and if he will only continue to give us more of the important information relative to those accidents which take place by medical men dispensing their own prescriptions, I am sure that pharmacists in the country will be grateful. With regard to legislation, the time is not very far distant when we shall have in Mr. Idris a good representative in the House of Commons. (Loud applause.) I am quite sure that we shall then have a champion there who will be able to carry us to victory. The legislation referred to by previous speakers will not receive the sanction of Parliament, and I should be very sorry indeed to see any further legislation on that particular point. I feel, with the President of the Pharmaceutical Society, that we should go on repeating prescriptions, but we should support the medical man in whatever he wishes us to do. I have great pleasure in supporting the motion moved by Mr. Robinson. (Applause.)

Mr. Martin : I am disappointed to find that it falls to my duty to put this motion, as the senior Vice-President present. I had expected to find Mr. Atkins and our friend Dr. Attfield here, but in their absence it devolves upon me to put the vote so ably moved by Mr. Robinson and seconded by Mr. Currie—that our best thanks be accorded to our President for his exceedingly able and interesting address. It is not in order to discuss the President's address, but there is a quantity of valuable and interesting matter which would be of help to us to discuss, but it would take the whole time of the Conference adequately to debate the various points raised in the address. I should like to thank the President and Mr. Robinson for their remarks in reference to the "Formulary." I think Mr. Idris gave you an excellent *résumé* of the commencement of it, and it is satisfactory to know that the labours of the Formulary Committee have been appreciated. The President touched upon many subjects, and it is a marvel to me that, with his numerous engagements and calls upon his time, he is able to find time to make himself so intimately acquainted with the affairs of pharmacy. We shall reap the advantage when the time comes, as it will come, when Mr. Idris takes his place as one of the legislators, and then his intimate knowledge of this subject will enable him to be of practical help to pharmacists. I have the greatest pleasure in putting the motion that our best thanks be given to Mr. Idris for his address. (Applause.)

The motion was then put to the vote, and carried with acclamation.

Mr. Idris said in reply : I thank you very warmly for your very kind reception of my attempt to interest you in the year's pharmacy, and I especially thank Mr. Martin, Mr. Robinson, and Mr. Currie for their undeserved eulogium of my paper. Although it is not what I would have liked it to be, I still hope that it may have some profitable result. I will not detain you any longer, except to ask you to hear Mr. Newsholme, who is anxious to say a few words especially before the ladies leave.

Mr. G. T. W. Newsholme, as Chairman of the Local Committee, at this stage rose, when a large number of the members had risen to leave, and made a brief statement respecting the social arrangements, especially in regard to the various parts of the programme which the Ladies' Committee had arranged. As to these, a printed slip was distributed, on the back of which was a plan of the city.

This done, all the ladies present left at 11.35 to have a car-drive, and the meeting resumed five minutes later with intimations of

Apologies,

which were read by Mr. Saville Peck. The first was from Dr. Attfield, who has to undergo another slight operation. Mr. Atkins was absent owing to private and personal reasons. Others who sent letters of apology were Dr. George Coull, Mr. H. E. Matthews, Mr. D. B. Dott, Mr. Twinberrow (Worcester), Mr. E. M. Holmes, Mr. W. Prior Robinson, Mr. W. Garsed, Mr. F. W. Branson, and Mr. Walter Hills.

Mr. Edmund White then read the following

List of Delegates

deputed by the various bodies to attend the meeting :

Pharmaceutical Society of Great Britain.—Messrs. R. A. Robinson (President), J. R. Young (Vice-President), Walter Hills (Treasurer), S. R. Atkins, M. Carteighe, W. G. Cross, W. L. Currie, W. H. Gibson, R. L. Gifford, W. S. Glyn-Jones, J. F. Harrington, G. T. W. Newsholme, and C. Symes.

N.B. Branch.—Messrs. D. B. Dott (Chairman), Alex. Strachan (Vice-Chairman), W. B. Cowie, W. L. Currie, W. Giles, J. P. Gilmour, and W. P. Wilson.

Pharmaceutical Society of Ireland.—Messrs. W. F. Wells (Vice- President), G. D. Beggs, J. W. Nicholl, and D. M. Watson.

Aberdeen Pharmaceutical Association.—Messrs. W. Giles (President) and James Paterson (Treasurer).

Brighton Pharmaceutical Association.—Messrs. W. H. Gibson (President), R. A. Cripps, C. Blamey, W. W. Savage, and C. G. Yates.

Bradford Chemists' Association.—Messrs. A. Hanson, John Jackson, and R. W. Silson.

Bristol Pharmaceutical Association.—Messrs. H. E. Boorne (Secretary) and G. T. Turner.

Cambridge Pharmaceutical Association.—Mr. E. Saville Peck.

Cheltenham Chemists' Association.—Mr. Barron.

Dover Chemists' Association.—Mr. R. M. Ewell.

Exeter Chemists' Association.—Messrs. W. H. Gadd and F. W. Vinden.

Forfarshire Chemists' Association.—Messrs. A. B. Anderson, A. Naysmith, and James Russell.

Glasgow and West of Scotland Pharmaceutical Association.—Messrs. J. P. Gilmour (Secretary), R. Brodie, W. L. Currie, R. McAdam, and G. Robertson.

Grimsby Chemists and Druggists' Association.—Messrs. C. Willson (Vice-President) and H. W. Colley (Secretary).

London Chemists' Association.—Messrs. R. B. Betty, A. Cooper, W. S. Glyn-Jones, J. Holding, T. H. W. Idris, Leo Atkinson, J. C. Umney, and J. W. Watson-Will.

London (Western) Chemists' Association.—Messrs. J. W. Bowen (President), J. F. Harrington, R. A. Robinson, and S. J. Weston.

London Chemists' Assistants' Association.—Messrs. J. Arrowsmith, W. Matthews, C. J. S. Strother, and W. S. Parker (Secretary).

Leeds Chemists' Association.—Messrs. J. H. Beacock, R. Fourness, F. C. Long (Secretary), T. T. Preston, F. Pilkington-Sergeant, F. W. Branson, and G. Worfolk.

Liverpool Chemists' Association.—Messrs. J. Alexander, T. F. Abraham, R. C. Cowley, Edward Evans, jun., Herbert Evans, and J. Shacklady.

Midland Pharmaceutical Association.—Messrs. A. W. Gerrard (President), F. H. Allcock, J. A. Radford (Secretary), H. W. Jones, J. Poole, and G. E. Perry.

Manchester Pharmaceutical Association.—Messrs. H. Kemp, J. C. Kidd (Secretary), W. Kirkby, J. Grier, A. J. Pidd, F. A. Ringer, and J. Wild.

Newcastle Chemists' Association.—Messrs. T. M. Clague, G. Foggan, G. F. Merson, and W. Prescod (Secretary).

North Kent Chemists' Association.—Messrs. R. Feaver Clarke (Secretary), H. Cook, A. Goldthorpe, and E. Millhouse.

Nottingham Chemists' Association.—Messrs. A. Eberlin and A. Middleton.

Oxford Chemists' Association.—Messrs. J. W. Todd (President) and G. C. Druce.

Sheffield Chemists' Association.—Messrs. H. Antcliffe, John Austen, P. Carr, R. D. Douglas, J. F. Eardley, A. R. Fox, J. G. Jackson, G. T. W. Newsholme, J. B. Pater, George Squire, J. W. J. Turner, and H. G. Williams.

Mr. N. H. Martin asked if this list had been verified to see if all the delegates were members of the Conference.

Mr. White (Secretary) replied in the negative.

Mr. Martin thought it important that this should be done. He had attended local pharmaceutical meetings at which persons were present who were not members, and some were not registered chemists, yet they took part in the proceedings, which was irregular. He thought this should not be in the Conference.

The President assumed that no one who came as a delegate would not ask to be a member of the Conference. (Hear, hear.) After a pause the President added, "The list has been gone through, and there are three who are not members."

Mr. White then read the

Report of the Executive Committee.

The Executive Committee beg leave to make their report upon the work of the forty-first year of the Conference. Thirteen members have resigned, sixty-eight new members have been elected, and fourteen members have been removed by death. Special mention must be made of the late Barnard Simpson Proctor, who was one of the founders of the Conference in 1863, the author of the first paper read at its meetings, and of many other original communications since. He was a model leader in pharmacy—a man of science and a staunch friend—and in him British pharmacy possessed and has lost one of its brightest ornaments. The death, too, of Alfred H. Allen, public analyst of Sheffield, causes a pathetic coincidence, occurring as it has done immediately before the meeting of the Conference in his town. He had for several years contributed papers of great interest and value to the Conference, and his genial company will be very much missed at Conference-meetings. A paper which he had prepared in collaboration with Mr. Arthur H. Tankard, and which he doubtless had hoped to be able to read himself, will be read at this meeting. We regret also to record the death of Mr. W. Ward, who was Chairman of the Local Committee at the last Sheffield meeting, in 1879. The death of John Barclay in July, 1903, occurred on the eve of the annual meeting, but too late for reference in our last report. In him pharmacy has lost one of its most able exponents, and one who during a comparatively short career had displayed exceptional ability in the prosecution of research. The relationship of the Formulary and the proposed "Compendium" of the Pharmaceutical Society has occupied the serious attention of the Executive, and several meetings have been held to consider the same during the year. It was thought advisable, before coming to a definite decision upon the subject, to call a special general meeting of the members to discuss the whole matter. This was summoned for Tuesday, May 17, and was held, by kind permission, at the Pharmaceutical Society's rooms. Mr. J. C. Umney moved, and Mr. F. C. J. Bird (Hon. Secretary of the Formulary Committee) seconded, "That the Council of the Pharmaceutical Society be asked to make a definite offer to the British Pharmaceutical Conference for their formulæ already published and those in readiness for publication, which publication was delayed owing to the proposal of the Pharmaceutical Society to publish a 'Compendium of Medicines.'" A long and animated discussion followed, in which several prominent members of the Conference and Pharmaceutical Society's Council took part, and the motion was eventually carried unanimously.

The terms of this resolution were accordingly conveyed by letter to the Secretary of the Pharmaceutical Society on May 25, and the following reply was received on July 13:

> Pharmaceutical Society of Great Britain,
> July 12, 1904.
>
> The Secretaries, British Pharmaceutical Conference.
>
> Dear Sirs,—With further reference to your letter of May 25, which was remitted by the Council to the Compendium Committee for consideration and report, I am desired to acquaint you that the Compendium Committee, after carefully considering the matter to which your letter relates, brought up last Wednesday the following report:
>
> "The committee recommend the Council to authorise the President to confer with the President of the British Pharmaceutical Conference with a view to the acquisition of the formulæ of the Formulary Committee, and to offer such honorarium as may be thought suitable."
>
> The recommendation was duly adopted by the Council, and the President has since the meeting been able to confer with the President of the Conference. As a result of the interview between the two Presidents, I am able to inform you that it has been agreed to offer the Conference an honorarium of seventy guineas in connection with the transfer of the material in the hands of the Formulary Committee.
>
> This proposed arrangement is of course subject to the ratification by the Council, but I feel sure that the action of the President will be confirmed by his colleagues at the August meeting of the Council.
>
> I am, Sirs,
> Yours faithfully,
> Richard Bremridge, Secretary.

> 17 Bloomsbury Square, London, W.C.,
> August 5, 1904.
>
> Dear Sirs,—With further reference to the correspondence that has taken place between this Society and the Executive of the British Pharmaceutical Conference on the subject of the B.P.C. Formulary, and to my letter of July 12 intimating that it had been agreed by the President of this Society, in consultation with the President of the Conference, that an honorarium of seventy guineas should be offered to the Conference in respect to the acquisition of the material now in the hands of the Formulary Committee, I have now the pleasure to inform you that at the meeting of the Council held here on Wednesday the above offer was unanimously confirmed.
>
> Will you, therefore, be so good as to convey to the Conference the fact that the Council now officially makes the offer of the above-mentioned honorarium, and, in the event of the Conference accepting the offer, will you please communicate with me in order that arrangements may be made for the immediate completion of the matter?
>
> I am, yours faithfully,
> R. Bremridge, Secretary.
>
> The Hon Secretaries of the British
> Pharmaceutical Conference.

These letters have been carefully considered by the Executive Committee at their meeting on Monday, August 8, and it was agreed to refer the whole question to this general meeting to decide upon the acceptance or rejection of this offer.

A grant of 5*l.* has been made to Mr. W. W. S. Nichols to investigate the drug damiana. He reports that the work is in progress, but not sufficiently advanced to enable him to make a report to this meeting.

The General Index of the "Year-book of Pharmacy" from 1886 to 1903 is well in hand, and will be completed as soon as possible after the next issue of the "Year-book." Mr. J. O. Braithwaite, the Editor, reports that the MSS. of Parts I.-IV. of the "Year-book" are in the hands of the printer.

The Executive again venture to draw the attention of members to the necessity of increasing the membership, and cordially invite all those interested in the welfare and progress of pharmacy to join the Conference.

On the motion of Mr. G. D. Beggs (Dalkey), seconded by Mr. Gowen Cross (Shrewsbury), the report was adopted. Mr. Cross expressed the hope that as the years go on and young pharmacists come forward, the list of members may go on increasing.

The President next called upon Mr. John C. Umney to read the

Treasurer's Report.

Mr. J. C. Umney submitted this. The year commenced with a cash balance of 81*l.* 17*s.* 1*d.*, and the receipts comprised 247*l.* 1*s.* 6*d.* from members' subscriptions, 14*l.* for sale of "Year-book," 60*l.* 18*s.* 9*d.* for advertisements, 27*l.* 8*s.* 1*d.* from Bell and Hills fund, an asset since realised 65*l.* 0*s.* 5*d.* and liabilities on open account 191*l.* 1*s.* 5*d.*—altogether 696*l.* 1*s.* 8*d.* The expenditure of the year absorbed the receipts and 40*l.* 3*s.* of the balance from the year before. The chief item of expenditure was 377*l.* 9*s.* 8*d.* for "Year-book," next to this being 55*l.* to the Assistant-Secretary as salary and rent of office. The Formulary involved 2*l.* 14*s.* 1*d.*, chiefly on stationery and stamps. The Bell and Hills fund dividend was 8*l.* 12*s.*, and 9*l.* 1*s.* 9*d.* was spent on books for Bristol. The fund amounts to 360*l.* of 2½-per-cent. Consolidated Stock, and there is a cash balance of 27*l.* 8*s.* 1*d.* in hand. The research fund amounts to 38*l.* 5*s.*, 5*l.* having been paid to Mr. Nicholls in respect to a damiana research.

Mr. Umney explained that it almost appeared from the statement that matters are worse than they are. This was due to the fact that the lists were issued earlier last year, so that a good many subscriptions came in before June 30, when the accounts were made up. This year these would come in later, so that matters would right themselves. He also mentioned that the Executive had spent a little more on the "Year-book," but he thought it good to keep up this important part of the Conference's work. Apart from this the only matters of note were that they had made various economies.

Mr. Maltby Clague (Newcastle-on-Tyne) moved, and Mr. Perry (Birmingham) seconded, the adoption of the report, which was carried.

Mr. N. H. Martin was then called upon to read the

Report of the Formulary Committee.

Following the report which was presented to the Conference at the last annual meeting, at Bristol, the Formulary Committee continued its work, and the first formal meeting was held on October 22, 1903, when Mr. N. H. Martin was re-elected Chairman and Mr. F. C. J. Bird Secretary. At this meeting a number of proposed new formulæ were considered and specimens illustrating many of these (which had been prepared and stored under usual conditions for some months in order to test their stability and keeping properties) were inspected. The work of the committee was found to be nearing its completion, so that it would have been possible to have issued another edition of the B.P.C. Formulary at an early date. The position of the Formulary Committee was discussed in relation to the new departure of the Pharmaceutical Council in deciding to compile and publish a "Compendium of Medicines." After due deliberation it was decided that as nothing was known as to the extent to which this "Compendium of Medicines" would traverse the ground covered by the Formulary, the work of the committee should remain in abeyance until after the next meeting of the Pharmaceutical Council. On November 10, 1903, at a meeting of the Conference Executive, Mr. N. H. Martin asked, on behalf of the Formulary Committee, for the opinion of the Executive with regard to the Society's "Compendium," and after considerable discussion it was decided to ask the Council of the Pharmaceutical Society to indicate to the committee of the B.P.C. the scope of its projected work, in order to determine how far that work would clash with the B.P.C. Formulary. As a sequel to this, on December 2, 1903, an informal Conference took place between the Compendium Committee, with Mr. Carteighe as Chairman, and Messrs. Bird, Naylor, Umney, and White representing the B.P.C. Formulary Committee, with the object, if possible, of arriving primarily at the actual nature of the work contemplated by the Pharmaceutical Council, and also of coming to some understanding between the two bodies as to the requirements on either side. After a long talk it was agreed that the Council of the Pharmaceutical Society should send a written reply to the Conference Secretary and also a draft of titles of preparations to appear in the "Compendium," including a few typical formulæ to be laid before an early meeting of the Conference Executive. It was further considered advisable, subject to the sanction of the Executive and on the invitation of the Council of the Pharmaceutical Society, that the Conference assist on terms of equality in determining the scope of the "Compendium" and in its compilation. On December 21 another meeting of the Formulary Committee was held, and a long discussion ensued respecting the "Compendium"; finally, a resolution was drawn up to be recommended to the Executive, to the effect that if an invitation was received from the Council of the Pharmaceutical Society for the members of the Formulary Committee to confer with them as to the necessity for and scope of the "Compendium" further consideration should be given to the matter. This resolution was recommended for adoption at a subsequent meeting of the B.P.C. Executive on the same day. At this point a letter was received from the Chairman of the Compendium Committee of the Pharmaceutical Society in answer to that sent by the B.P.C. Executive on November 14, 1903, in which it was stated "as a result of that informal interchange of views, I am authorised to say that it is desired to have the co-operation of the British Pharmaceutical Conference in the production of the projected work, and that the Compendium Committee would be glad if the Executive Committee of the Conference could see its way to appoint a small committee with power to arrange the basis upon which it might be practicable to place at the service of my colleagues and myself the experience and scientific attainments of the members of the Formulary Committee."

At a meeting of the B.P.C. Executive on January 25, 1904, a sub-committee was appointed (Messrs. N. H. Martin, J. C. Umney, W. A. H. Naylor, F. C. J. Bird, and Dr. Symes) to confer with the Compendium Committee, and a reply was also drafted and directed to be forwarded to the latter by the Hon. Secretaries.

The result of this was an invitation by the Chairman of the Compendium Committee to the B.P.C. sub-committee to meet them on March 2, 1904, for the purpose of learning any proposals that might be put forward, and to consider the whole question.

At this meeting the Compendium Committee was represented by the Chairman and Messrs. Allen and Newsholme. After some discussion the Chairman informed the sub-committee that the assistance they were prepared to accept was that individual members of the Formulary Committee might continue their work and from time to time hand over the result of their labour to the Compendium Committee to be dealt with as the latter thought fit.

The Formulary sub-committee reported this to the Conference Executive on April 19, and the latter recommended that a special meeting of the members of the Conference should be called to consider the desirability of placing the B.P.C. Formulary at the disposal of the Pharmaceutical Society. A special general meeting of the Conference was therefore held at 16 Bloomsbury Square, London, on Tuesday, May 17, at 4 P.M., and the whole matter was thoroughly discussed. Finally it was resolved unanimously that the Council of the Pharmaceutical Society be asked to make a definite offer to the British Pharmaceutical Conference for their formulæ already published and those in course of preparation, the publication of which was delayed by the announcement of the Council in connection with their "Compendium." The further development of the situation is in the hands of the Executive Committee, and the result will be placed before the Conference for its decision.

On the motion of Mr. Martin, seconded by Dr. Symes, this report was received.

"Compendium" v. "Formulary."

The next item on the programme was—

> Discussion upon an arrangement between the Council of the Pharmaceutical Society and the Conference concerning the Formulary.

Mr. J. C. Umney moved—

> That this meeting of the British Pharmaceutical Conference accept the offer of seventy guineas for the work of the Formulary Committee and all rights in connection with the same.

Mr. Umney said that the report of the Formulary Committee had explained the circumstances of the acquirement of the "Formulary" by the Pharmaceutical Society, but in reply to the request of the President he added a further explanation. He said that the idea of the "Compendium" arose from a desire to publish a book to meet the difficulty which chemists had experienced through the working of the Medicine-stamp Acts. At that time the Formulary Committee were engaged on the new edition of the "Formulary," but observing that the Pharmaceutical Society were suggesting to publish a work on the same lines it seemed desirable to negotiate with the Society as to the ground to be covered by the "Compendium." If the whole work was to be copied into the "Compendium"—with acknowledgment perhaps—there would be but little sale for the Conference "Formulary." The committee therefore felt justified in asking the Pharmaceutical Society to compensate the Conference for the loss of income which would ensue.

Mr. F. C. J. Bird seconded the proposal, but said he would prefer to reserve his remarks till later on in the discussion, which caused some laughter, as Mr. Umney had had the same diffidence.

The President said it was necessary for the seconder to give his reasons.

Mr. Bird, continuing, said the chief reason why he seconded the motion was that there did not appear to be any other course open. There was not room for two publications of the like nature, and if the work is to be done it must be done by either one body or the other. The Pharmaceutical Society may be in a position to produce a better work than the Conference, and therefore the Conference should help the Society as much as possible.

Dr. C. Symes said he regarded the "Formulary" as a child of his own, as years ago he had been at some trouble in convincing the Conference to undertake the work. It was left, however, to Richard Reynolds to persuade the Conference that it was a desirable thing to do. The reasons advanced at that time for the publication of the book had none the less force to-day, when new remedies still come forward which it is desirable that the medical profession should have a means of testing. Some means of ensuring a uniform preparation for use in dispensing prescriptions is very desirable. In his opinion the Conference is a better body than the Pharmaceutical Society to undertake such a work. The Pharmaceutical Society has a great many duties to perform, and no obligation to publish such a book. If the Society produced such a work it would give it a more official character than it possesses at the present time, and in doing that the Society would be accepting a greater responsibility. The Council decided by about seventeen to four that it was desirable to produce such a work, and then it became evident that there is not room for the two books. The Conference have experienced much courtesy from the Pharmaceutical Society, have met in the Society's room, and never experienced any jealousy in the matter of procedure. He felt that there is courtesy due to the Council in the present matter, and that the Conference, having made their protests, feel it a duty to be loyal to the Society and support the Council. He (the speaker) had been on the committees that dealt with the "Formulary," and had taken part in the whole of the discussion, which had always been friendly, fair, and reasonable. It was at first thought that the Conference were putting too high a value on the "Formulary," and that they had nothing in hand that the Society could not take without asking. Now, however, he desired to say that the Pharmaceutical Society recognise that they are getting value for their money, and the Conference recognise that in relinquishing their rights a larger book will be provided and well and thoroughly done. He hoped the meeting would see their way to endorse the decision of the Executive.

Mr. W. S. Glyn-Jones asked whether the Chairman of the Formulary Committee could tell the meeting anything of the scope of the proposed book, as in the report that had been read the Formulary Committee are stated to have conferred with the Pharmaceutical Society as to the scope. What was the result of that interview?

The President said this would transpire.

An Amendment.

Mr. N. H. Martin said reference had been made to friction and discord, and he desired to say that there was none—such a thing was absolutely impossible between members of one family. When he (the speaker) first visited London, thirty-seven years ago, his first visit was paid to Bloomsbury Square, the Mecca of pharmacy. It was true that the walls were broken down and that thistles had grown where there should have been fruit. (Laughter.) Many of those present pay their subscriptions to both and are equally loyal to the Society and the Conference. In what he was going to say he disclaimed personal matters. Mr. Carteighe, to whom he would have occasion to refer, was a personal friend of his of thirty years' standing, and had said more kind things about him than any man living. It was a little painful to have to state differences of opinion with old friends, but it was his duty to such men as Brady and Reynolds that this subject should be adequately discussed—not with closed eyes, even when there is seventy guineas to consider. The amendment he had to move was—

> That the Pharmaceutical Conference, having carefully considered the offer by the Council of the Pharmaceutical Society of an honorarium of seventy guineas to give up its rights in the Conference Formulary, beg to decline the same in order that the Conference may remain free to pursue any course it may deem best for pharmacy.

In the President's address an excellent *résumé* had been given of Reynolds's motion, which gave birth to the "Formulary." Thomas Greenish was President of the Birmingham Conference, where the matter came up. The subject had been discussed for years, but up to the Birmingham meeting always from the side that the Pharmaceutical Society should have official recognition in the compilation of the Pharmacopœia. At Birmingham Greenish referred to an *interim* volume between the publication of the editions of the British Pharmacopœia. He said the Conference was in his opinion "a proper body, and *the* proper body," to undertake the work. Greenish was supported in this by such men as Martindale, Schacht, Ince, and Hampson, the report of the discussion occupying some fourteen pages of the "Year-book." Schacht definitely suggested that the work should emanate from the Pharmaceutical Society, but Ince was of opinion, for ethical and other delicate reasons, that it was by preference the work of the Conference. These men had an intimate knowledge of the facts before them. Mr. Atkins, who seconded the motion, stated that he was in entire accord in preferring that the work should be done by the Conference and not by the Society—a statement worth recalling at a time when Mr. Atkins seems to have forgotten it. The first Formulary Committee consisted of Greenish, Groves, Martindale, Symes, Thresh, Martin, Naylor, Abrahams, and Reynolds (to the long services of each he referred), and these men produced a "Formulary" which was first published in 1887, having been presented to the Manchester Conference at which Mr. Atkins was President. Schacht spoke no word of regret at the action that had been taken. On the contrary, when Benger occupied the presidential chair at Bath, he suggested, on account of the need for a standard formula for tincture of strophanthus, that in cases of urgency the committee might be empowered to publish provisional formulæ approved of by at least seven of the members. Mr. Robinson in the discussion on that occasion said it was a little dangerous to entrust such a responsible matter to seven men. Now he reposes his trust in a committee of three. (Laughter.)

Mr. Robinson : Allow me to refer to that.

Mr. Martin, continuing, said the "Formulary" was praised by many. Collier, a man of wide experience, said it was highly appreciated by medical men. At Oxford Lloyd-Williams and Linford said the book was of great practical use. Mr. Carteighe at Bournemouth in 1895 said he had received information that the Pharmacopœia Committee of the General Medical Council much appreciated the work of the Conference in every respect, and whenever the question arose of adopting a B.P.C. formula it was done without discussion.

"I Now Come to the 'Compendium,'"

said Mr. Martin. Mr. Robinson had said there were great reasons, which they all knew and agreed upon, for the production of the work. He (the speaker) had read all the discussions that had taken place in the Council and was unable to find any of the great reasons. On the contrary, there was great secrecy and mystery. What was the necessity of such secrecy he could not tell. The Conference never made a mystery over their doings. While experiments were proceeding they were kept quiet, but there never was any mystery as to the scope of the work. "When I was a little boy," continued Mr. Martin, "they used to say that secrecy and guilt were very closely allied." (Laughter.) These people, he proceeded to say, must feel a little guilty. On the book title-page the words "By authority" were to be used. These words are not used on the B.P. at the will of the General Medical Council, but by statutory authority of the law of the land. Any man or group of men who claim to have qualifications they do not possess are charlatans. (Sensation.) The period when the "Compendium" idea originated was one of great excitement. Men owning proprietary medicines appealed to the Council to help them, they were in a "blue funk," to quote Mr. Carteighe, and out of this blue funk the publication of a "Compendium" was decided upon in an hour, and the policy of the Society for sixty years reversed. What are the qualifications of the men who undertook to produce the "Formulary"? They were as entitled to ask this as they were of prospective members of Parliament. Well, on searching the index of the "Year-book" to 1886 he found the following records against the committee : Greenish, 17 papers on pharmacy; Groves, 20; Martindale, 8; Symes, 15; Thresh, 23; Martin, 1; Naylor, 11; Maben, 4; Abraham, 2; Reynolds, 9. Now turn to the names of the Compendium Committee who claim to revise the work of these men. He was sorry all the members of the committee were not present, but it was his duty to look into their work. Atkins had never published a paper on a pharmaceutical subject. He had published one on ethics, one on apprenticeship, and one of pharmaceutical notes in which he bewailed the fact that the public knew so little of the difference between "pharmaceutical chemist" and "member of the Pharmaceutical Society." Carteighe had published two papers, in 1869 and 1871; whilst Newsholme had not published a single paper on pharmacy. Everyone knew that Mr. Newsholme was an authority on territorial representation—(laughter)—but nobody would accept that he had any supreme fitness to revise the work of such men as Greenish, Martindale, and Symes. He (the speaker) had tried to find out what was to be the scope of the "Compendium." He was told that time was an object—that it must be published by January 1. He asked them as pharmaceutical chemists what had been the difficulties involved in the publication of the Pharmacopœia; they had not yet got over the difference of the belladonna extracts. Work published in haste would surely be regretted.

Mr. Peck (to the President) : Is this in order?

Mr. Martin : I think it is in order, with all due respect to Mr. Peck. I think I know as much about the conduct of public business as he does. Continuing, Mr. Martin said prescription-books and shop-shelves would be chaos in five years. He had heard it suggested that formulæ were to be given for domestic medicines. Who, he asked, wants domestic remedies published by authority? The competent pharmacist does not, as he knows he can make them a little better himself. Public analysts would like them, no doubt, especially a book "published by authority."

The President here reminded Mr. Martin that the time of adjournment was drawing near.

Mr. Martin brought his remarks to a close by saying that the Conference had done its work well, and there were excellent reasons why the Conference should be allowed to go quietly on its own way. (Applause.)

Mr. W. F. Wells desired to second the motion, and said that if the meeting was to adjourn in five minutes he would prefer to leave his remarks until later, as they would occupy longer than that.

The President agreed to adjourn, which was done at 12.45.

The Second Session, Tuesday Afternoon.

The meeting resumed at 2.10, when about forty persons were present including a few ladies. The President called upon

Mr. Wells, who said he seconded the amendment because he was pretty well convinced that it was in the best interests of the Conference. From what he read in the journals he had come to this conclusion, but he had come to the Conference with an open mind, expecting that the proposer and seconder of the recommendation would give them some reason why they should adopt the recommendation. They stood in this position : Mr. Umney had given information as to why they should adopt the resolution. On the contrary, he thought Mr. Martin had given a good deal of information as to why they should not. He did think the action of the British Pharmaceutical Society in this matter was peculiar. They had an opportunity years ago to publish this "Formulary," but declined to do so; they left it to the Conference to start the enterprise, and when they find that to some extent it had paid the Conference to do the work, they turn round and say, "With or without your leave we will do it." (Applause.) He thought this sort of thing was confined to the Emerald Isle—(laughter)—but he did not expect to find it here. He humorously compared the Pharmaceutical Society to a big boy who politely asks a small boy for something he has, and winds up his request with a threat to knock the breath out of him! (Laughter.) The British Society said. "Whether you will or whether you will not, we will take your property." They then came forward and politely said, "You have nothing to sell; you have no property," although they had previously said they would take their property, and ended up by saying, "We will give you a present of seventy guineas." He hoped the Conference would have spirit enough to refuse the offer. If the Society meant business let them come to the Conference in a business manner—let it be a business transaction. (Hear, hear.) If the Conference decided to accept the offer, let them do it in that way, that they were going to give something and that they were to get something for it. He noted in the remarks of their respected President some reference that would lead one to think it was this Conference which first approached the Society. He thought it only fair that it should be understood the reason this was done was that they had been told that whether they would or not the Society would take their property. Some members began to get anxious—he did not know why. They had a "Martindale" and a "Squire" before, and yet in spite of these two their "Formulary" had taken on and was selling. He thought they ought to have some formulæ, and he thought they should be issued by a society like this, which is not the representative of British pharmacy, but of the Greater Britain pharmacy. In

The City from which he Came

they were in the happy position that no medical man would think of dispensing, and it was his view that the Conference should publish the "Formulary" as the representative of Greater Britain, and that they as pharmacists should take this book up and make greater use of it than they had in the past. He need not remind them that prescription-writing had been undergoing a great change in the past few years. Medical men, who used to receive a training in pharmacy, now paid a fee, and he did not think he would have much difficulty in proving that these so-called pharmacy classes were not much use at all. The majority of the younger medical men were not trained in pharmacy, and would not write prescriptions. The Americans as a consequence were sending over missionaries to convert the heathen. (Laughter.) They should have a "Formulary" published by this Conference and they as individual pharmacists should go to their medical men and ask them to use the "Formulary." They would be able to assure them that they would get freshly made prescriptions and new drugs. He thought it was the right of this Conference to hold on to their position. Had there been any reason shown why they should give it up? He did not think there had. (Applause.)

Mr. Glyn-Jones said he was waiting to hear

Some Further Arguments Adduced

why the resolution submitted to the meeting should be passed. He thought it was an accepted axiom that anyone who wanted a position changed has thrown on him the onus of showing the desirability of the change, and what had been before them? They were told that the Executive Committee had had this matter under consideration for months, that they met the day before with all the information before them they were able to put before the meeting, and as a result they come forward with a recommendation that they should sell the "Formulary." (Cries of "No, no.") That was his point. The Executive Committee were not satisfied that they would be justified in recommending the meeting to sell the "Formulary," that was evident. Then somebody was got to move it, and his friend the Treasurer moved it, and was particularly diffident about having anything to say on his motion, and it was only on a prompting from the President——

The President interposed at this point to explain that the resolution was not passed by the Executive Committee because it was not the business of that committee to bring forward a resolution of this character.

Mr. Glyn-Jones, continuing, said that his friend the Treasurer was not under any actual obligation, and he pointed out that the Treasurer had practically to be coaxed to say anything in favour of the motion; he said practically, "Gentlemen, we are in a fix; these people at Bloomsbury Square will publish their 'Compendium' whether we let them have our 'Formulary' or not: let us sell it." (Laughter.) Mr. Bird seconded, and he had the same diffidence. (Laughter.) He had to be coaxed, and then he said practically the same thing. He noticed particularly that the President, in paving the way for this resolution, did so by suggesting the question of loyalty. He thought they ought to have done with

Any Question of Disloyalty

if any man got up and expressed an opinion contrary to those in authority. The British Pharmaceutical Society in times past had suffered because they had heard too much of loyalty to those on the Council and to the President of the Society. To outsiders he had urged that when they came here they should express their views without any suspicion of disloyalty. Had the Executive Committee considered what this course they recommended meant? Mr. Carteighe had not recognised that the Conference had anything to sell. It had been clearly said that they had nothing to sell, and all that was before them was an honorarium. What for? If they were asked to give up something to the Pharmaceutical Society, whatever they called it, whether honorarium or price, they had sold their property to the Society. And what was it that they had sold? Not their "Formulary" that they had only, or that which was to be published, but they had sold the right of the Conference to publish a book of formulæ. He asked the Executive Committee to tell them whether they had taken advice as to what their position was with regard to this property, because he thought they had a valuable property in the book. They might be told that if the Pharmaceutical Society produced this book of theirs, there would be no sale for that of the Conference. He was not going to compare those who would be responsible for the "Compendium" of the Pharmaceutical Society with those who had been responsible for the "Formulary"—it would be an invidious thing for him to do—but he would say this without fear: that no other book that the British Pharmaceutical Society might issue could be produced without the active support of the members of this Conference; of that he was positive. They would have a faulty Pharmacopœia and a faulty "Compendium" if the gentlemen on the Conference Committee were to be ignored. What it really amounted to was this—that the price the Society was paying was the price for the support of these workers, because, otherwise, what would be the position of these workers? There would be no book published by them to which they could contribute their formulæ. If their formulæ were to receive recognition it must be by the General Medical Council. He knew something about the inception of this "Compendium," and asked in the best of good feeling that any of his colleagues on the Council would be good enough to tell the meeting what they knew personally of the scope of the "Compendium." His own conviction was that no one, with the exception of Mr. Carteighe and one of the officials of the Society, knew what was to go into the "Compendium." If when the Conference was held last August he or anyone else had got up and said there was going to be an offer made for the "Formulary," he would have been considered mad. What happened? The Inland Revenue took some steps, and as a consequence the Editor of the "Pharmaceutical Journal" thought it necessary to publish a "Formulary," and Mr. Carteighe moved that the Society should publish such a book which should be ready by last January—a book to meet the requirements of the Medicine-stamp Acts—and when his friend Dr. Symes said that seventeen out of twenty voted in favour of the book, it was that book that they voted for. If they had stopped there they would have done good work, but apparently they got it mixed up with this "Compendium" idea. Why did they not come to the Conference and ask them if it would clash? The approach ought to have come from the Council. He held that it was the bounden duty of the Society to recognise that it did interfere with the labours carried on by this Conference, and to have come as an act of grace to the Conference. He had asked the Chairman a straight question. The Executive Committee had said, "Let us ask the Council what is the scope of the work and ask them to take us in." He asked the Chairman if that had been done, and he said, "No." He was going to ask them to say that when this Conference years ago decided to publish these formulæ as an "Unofficial Formulary" they builded better than they knew. (Applause.) There was going to be very grave danger if they were to have two books published by authority. He knew the difficulties of having one book published by authority, and when they said it was never intended to be a standard under the Food and Drugs Acts he asked them how long it would be before such a book as that proposed would be regarded as a standard such as the British Pharmacopœia. (Hear, hear.) Were they to have two tinct. rhei on their shelves? The whole thing wanted carefully considering, and he asked them to support the amendment. (Applause.)

The President remarked that as the Conference has no Standing Orders he thought he must express an opinion that an explanation was due to his friend Mr. Robinson as to how he (the President) got into his position in this matter. With this view he called upon a member of the Executive Committee to make a statement—viz., Mr. Peck.

The History of the Matter.

Mr. Peck stated that as the letter of May 25 had not been answered at the meeting of the committee on June 24, Mr. Idris, who was in the chair, offered, at the end of the meeting, to see the President of the Pharmaceutical Society and endeavour in a friendly way to get an answer to their letter and to see if some amicable arrangement could not be arrived at. At the Executive meeting there was no definite resolution drafted, but there was a general expression of approval. So the meeting of the Presidents took place, with the results that they all knew. At the meeting on June 24 they considered they were doing the right thing, and they certainly thought they would have the support of the Chairman of the Formulary Committee, and their reason for this was a letter which he held in his hand, from the Chairman of the Formulary Committee [Mr. Martin], dated May 16, the evening of the annual meeting. The speaker had written round asking for papers for the Conference, and he received a letter (which he proceeded to read) from Mr. Martin. This letter stated that Mr. Carteighe, as representing the Council of the Pharmaceutical Society, had stated their intention to publish the "Compendium" in any case, and that if Mr. Martin's colleagues on the Formulary Committee thought it wise to make a financial bargain with the Society he did not wish to oppose it, although his personal view would be that the committee should stand aloof. Continuing, Mr. Peck said that he thought it well to read a letter he had received from the Chairman of the committee. He then read a further letter he had received from Mr. Martin, dated July 25, in which he said that he thought the offer contained in the letter from Mr. Bremridge was a reasonable one, and if it were passed by the Council of the Society in time to go before the Conference in an official manner he saw no reason for rejecting it. In order that there might be no hitch, and as it was impossible for him to have a meeting before the meeting of the Council, he was writing each member of the committee asking his opinion on the matter. Continuing his speech, Mr. Peck said that he quoted these letters to show that they as an Executive Committee had taken full consideration of the matter, and had the valuable assistance of Mr. Martin, who has told us he is the senior Vice-President. In a letter of August 1 Mr. Martin had again referred to this question, and said that if the offer of the seventy guineas be got into shape they might accept the report of the Formulary Committee, concluding with a recommendation to accept the offer. Mr. Peck said that he thought, therefore, that the Executive had been justified in going upon the lines they had taken. (Sensation.)

Mr. White followed, and pointed out that the Formulary Committee was appointed by the Conference and not by the Executive, and therefore the doings of the committee and matters connected with its conduct could not be dealt with by the Executive. The matter of bringing up a recommendation to the Conference was not pressed at the meeting held the previous night. He thought it necessary to make these remarks because of the attention called to this point by Mr. Glyn-Jones.

Mr. Martin said that the letters read were very interesting—(laughter)—and entirely corresponded with what he had said previously. He made no complaint against the Executive, or that the President had not done his best and wisely for the interests of the Conference. He submitted that his reference to accepting the Pharmaceutical Council's offer was not inconsistent with his discussion of the whole principle involved.

The President thanked Mr. Martin for his remarks, but said he thought the meeting would conclude from the letters read, and from the opinions expressed by the other members of the committee, that it was desirable that he (the President) should approach Mr. Robinson, and not only that, but hurry up the reply from the Society; and that no opposition, but just the reverse, would be given by any member of the Executive—not even Mr. Martin. (Hear, hear.) In these circumstances he did feel that he owed a strong apology to his friend Mr. Robinson for approaching him in the matter. The negotiations had been verbal, but had been confirmed in a letter he had since received from Mr. Robinson (which he read), giving the various points decided upon between them and confirming them. (Applause.)

The Man who Knows.

Mr. John Humphrey said he was not going to attempt to sway the decision of the meeting; but as the only man in Sheffield who knew all about the matter he would like, as an ordinary member of the Conference, to say a few words. He had been in Mr. Carteighe's confidence, and had attended all the meetings of the committee that had considered the matter. He could say from the very outset there had never been any intention of interfering with the scope of the "Formulary." The "Compendium" would not interfere with the "Formulary," and the Formulary Committee, in his opinion, have been very foolish in not producing their book early that year: it would have already been selling freely. "Squire" and "Martindale" have not interfered with the sale of the "Formulary," and neither would the "Compendium." Mr. Carteighe's view was that there was no reason why the "Formulary" should not have been published. The Compendium Committee were not at all anxious to purchase the "Formulary," as they felt the Conference had nothing to sell. The "Compendium" will be produced, and will have a well-defined scope, but it is none of the business of the British Pharmaceutical Conference to define the work of the Pharmaceutical Society. (Sensation.) If the Conference did not accept the seventy guineas it was going to lose something. Mr. Martin was the first person to suggest a money payment. [Mr. Martin: I have no recollection of such a suggestion.] Mr. Humphrey would not give way, and as to the scope of the "Compendium" said, "We regard the 'Compendium' as a business enterprise, and as business men don't propose to give away the scope." (Sensation.) The idea of payment for problematical loss came from the Conference. Mr. Carteighe said, "Is it money you want?" and the Treasurer referred to the bad state of the Conference funds. (Some disapprobation.)

The President: The first suggestion of a payment came from Mr. Carteighe.

Mr. Humphrey, continuing, said there was no documentary evidence on this point, but the impression left on his mind was that the suggestion that some recompense should be made came from the members of the Executive. The general view was that there was no idea of interfering with the "Formulary," and monetary consideration was suggested to meet problematical damage. As to how the seventy guineas was arrived at he did not know——

The President: I will explain presently.

Mr. Humphrey: The Compendium Committee do not want to purchase the "Formulary," but give an honorarium as an act of grace, and not as payment for value received.

Dr. Symes: This is an unfortunate speech. Does Mr. Humphrey speak as a member of the Conference or as a representative of the Compendium Committee?

Mr. Humphrey said as a member of the Conference: then retired from the meeting.

Mr. Alcock: We are talking about seventy guineas, but we know nothing about the origin of it. Perhaps the last speaker, who has such exclusive knowledge, will enlighten us.

Mr. Glyn-Jones: Do we give up all our rights in the "Formulary"?

The President: I think there is no doubt that if we accept this offer we do.

Mr. Newsholme then rose to speak and was requested by the President to come to the platform. He did, and in a lengthy speech proceeded to justify what he and other members of the Compendium Committee had done in the matter. They were determined to prepare and publish a book and to put into it the Conference formulæ, and ultimately had adopted the businesslike course of coming to an arrangement with the Formulary Committee in regard to it. He urged the members to support the motion as being the better course.

Mr. Alcock gave the members a momentary fit of laughter by quaintly putting to them that they were to get seventy guineas for something; then he took the remaining facts and made a pretty little jumble of them, which gave his audience a good laugh.

Mr. J. F. Tocher (Peterhead) next had the privilege of the floor, and at once said that the members should clear their minds of personal differences and apply them to the questions at issue. He had listened to the matter as explained by both sides, and was not convinced that the Conference ought to part with this valuable property. Mr. Humphrey had given away the case for the motion, and he was not surprised to hear that he alone was in Mr. Carteighe's confidence, but he was surprised that after a responsible councillor like Mr. Glyn-Jones had to confess that he did not know what the "Compendium" is to be, Mr. Humphrey should get up and say that he (Mr. Humphrey) was the only man in Sheffield who knew all about it. (Laughter.) He was astonished at Dr. Symes's attitude, seeing that he thought the Conference is more suited to do this sort of work. He was afraid Dr. Symes was sitting between two stools, and was not very successful —(laughter)—like another great man.

A Solomon may practise all his wit upon
Dame Nature's mysteries, yet fail to hit upon
A plan whereby securely he may sit upon
Two stools.

It had been said that there would be absolutely no use for the "Formulary" when the "Compendium" is published. He wondered if that would apply also to "Squire" and "Martindale." Mr. Tocher also smilingly pointed out that the Celtic element so far had been all on the side of the amendment, and hoped some Englishmen would speak for it; but he questioned if any decision of that meeting, or any meeting, would be binding unless each member received a notice that the matter was to be decided thereat.

The President ruled that it is competent for the annual meeting to decide anything within the sphere of the Conference.

Mr. Henry Conyngham said all the discussion could be summed up in a few words. Were they to sell all the liberty of the Conference for time and eternity for seventy guineas? His advice was to sell nothing, but help the Pharmaceutical Society all they can. Do not sell their liberty for all time for seventy guineas. When he heard of the proposal he thought it was to be a yearly payment, but he was astonished to find that all the brains of the Conference were valued at seventy guineas for time and eternity. The discussion would not, he hoped, take a racial aspect; they all belonged to the Union, and the question ought to be to do the best for the Conference and for the men who make their living out of pharmacy.

Mr. Gadd said he would like it made clear that the supporters of the amendment did not support all the remarks of the speakers, and were not necessarily disloyal to the Pharmaceutical Society. His (the speaker's) loyalty to the Conference is nothing to that for the Pharmaceutical Society: the one is a private opinion and the other an heredity. He took the ground that the Pharmaceutical Council have no mandate from their constituents to publish a "Compendium."

More Official Utterances.

Mr. J. R. Young said that Mr. Martin at the commencement of his speech asserted that it was his wish that the discussion should be conducted in a perfectly amicable manner, but his methods of making harmony and concord were more original than successful. He (the speaker) did not close his eyes to the work of the Conference, but refused to regard the Conference as the *alpha* and *omega* of progress in pharmacy. In the old days, before the Conference came into existence, they had Gray's Supplement upon which "Squire" and other books had been founded. There were also admirable little books like "Pharmaceutical Formulas" which did not depend on the Conference. The Council of the Pharmaceutical Society have a perfect right to depart from the old lines. A charge is often made that the Society never does anything useful, and now when it is proposed to go on new lines an objection is at once raised. He asked the meeting not to be misled by the specious and captious arguments of Mr. Glyn-Jones—it is not the first time he has led them into a quagmire. He (the speaker) was surprised to hear Mr. Glyn-Jones disclaim his loyalty to the Society. [Mr. Glyn-Jones: I referred to interminable loyalty.] The proposition before the meeting was a businesslike one. Notwithstanding the satire and banter that have been indulged in, there has never been the slightest doubt about the style and scope of the book. The question before the meeting is, Accept the seventy guineas or retain your rights. Whichever decision was come to the "Compendium" was going to have the "Formulary" whether the Conference liked it or not. (Sensation.)

Mr. R. A. Robinson said he was longing for a fight, but his official position prevented him from throwing himself into it as he would like. There were, however, one or two matters of fact that needed explanation. In a letter he had from Mr. Martin a few days before, which he regretted he had not with him——

Mr. Martin: If you had, you would have found it marked "Private" on the top left-hand corner.

Mr. Robinson said in that case he would of course not disclose the contents, but he thought there was no objection to saying that the letter gave no indication that Mr. Martin was likely to take the attitude he has taken that day. The Society does not want to press seventy guineas into the reluctant hand of the Conference if they do not want it. His recollection is that the Conference asked for some compensation for the non-publication of their book, and he, as President, at once acceded to the request. Mr. Martin evidently had the same thing in his mind, judging from the letters which Mr. Peck had just read. As members of the Conference they have to consider what is the best course to pursue and carefully to consider what they are going to do. The "Formulary" is not sufficiently known. Everyone knows the skill and labour bestowed on the work, but it does not take the position it should. A book produced by the Pharmaceutical Society would be of a more enduring character. The members had better consult their Treasurer as to the advisability of accepting the offer. As to the scope of the book, he saw no reason why they should not know, and would be pleased to enlighten them. The book, it was hoped, was to be a book for the dispensing chemist and the prescribing physician, and it was hoped to give the best manner of prescribing medicine as well as how to prepare it in the shop of the retail pharmacist. It was hoped to get medical men to use the work, which would be a valuable one for reference, and one which the Society were quite justified in bringing out. One of the reasons for bringing out the book is that chemists are asking the Society to show some activity and that they (the Society) are alive. Mr. Martin was unfair to compare the members of the Formulary Committee with the Compendium Committee. The latter committee had many eminent men among them. Had they not heard of Professor Greenish, of Mr. Edmund White, and Mr. Harold Wilson? There were others whom he could not remember, and with them it was hoped to have all those who had worked on the "Formulary" for years. Mr. Idris need not apologise for having introduced the matter to him, as he was quite satisfied with his (Mr. Idris's) *bona fides*. He (the speaker) would tell the meeting how it happened. It had been said in a Council-meeting that there was no friction between the two bodies, and that the two Presidents would arrange the matter amicably in five minutes. Well, it was arranged in less than that at a garden-party at the Botanic Gardens. He took a cup of tea with Mr. Idris instead of being presented to the Prince and Princess of Wales, as he thought it was a more important matter. Fifty pounds and seventy-five pounds were mentioned, and Mr. Idris struck the mean by suggesting seventy guineas. "I said, 'Done, I agree,'" added Mr. Robinson, concluding his speech with a recommendation seriously to consider whether the Pharmaceutical Council had not been invited to make monetary payment. It was for the Conference to go back on the arrangement made with the Council or to accept a sum of money which will be useful to the Conference.

Dr. Symes explained that he was the originator of the idea of the "Compendium" interfering with the "Formulary." The former was first mentioned at the Pharmaceutical Council in June of last year and agreed to. Two months later he objected on the ground that while the Conference publishes a book the Society should not do anything to interfere with it. Dr. Symes also referred to Mr. Martin's attitude, which surprised him; and as to Mr. Glyn-Jones, said that it is his nature to argue. Finally he remarked that publication of the "Compendium" would strengthen the Society's position in getting a hand in Pharmacopœia-revision, for if medical men got the "Compendium" and found it a useful book future Pharmacopœias would be a coalescence of the "Compendium" and the B.P.

Mr. Conyngham expressed the hope that if the motion was to be carried it would be done unanimously.

Mr. Naylor then, on the invitation of the President, rose on the platform to say a few words. He remarked that he intended to vote for the motion. As a member of the Executive Committee he had twice held up his hand in favour of a resolution to go forward to the Pharmaceutical Council and ask it what offer it would make, and he was bound in honour to vote for the resolution. In common with other members of the deputation who met informally the Compendium Committee, he did his best to extract from the Chairman what the "Compendium" is to be, and he could learn nothing, for the simple reason that the Chairman was not quite clear what would go in it—whether it would be a pharmacists' Pharmacopœia or a Pharmacopœia for physicians. It was useless to press for information. But, he added, anyone present at the informal meeting would have been impressed with the fact that it will be a worthy volume, and will have the advantage of the assistance of those who have worked on the B.P.C. Formulary, and will be produced at a cheaper rate than the Conference could do it. (Hear, hear.)

The President then read the motion and the amendment, and put the latter, when twenty-one voted for it and forty-three against. The motion was then put, forty-one voting for it and nineteen against. It was accordingly carried amidst some acclamation.

It was a quarter to four when the President called on Mr. R. Wright to read the paper on

Standardised Powdered Alcoholic Extracts.

By E. H. Farr and R. Wright, Pharmaceutical Chemists.

I. *Extract of Hyoscyamus.*

It cannot be claimed that work on standardised extracts has resulted in conspicuous success, or that standardised official extracts are satisfactory pharmaceutical preparations. In the case of extracts of belladonna-root and nux vomica this is doubtless due largely to preparation from previously standardised extracts, in which alkaloid and extractive proportionately vary within very wide limits. The chief cause of the failure lies, however, in the attempt to retain for the standardised product the character of a semi-solid or solid extract, the result being that commercial samples of the same extract sent out by different manufacturers exhibit considerable variation both in appearance and consistency. The authors are convinced that the only satisfactory solution of the problem lies in the direction of powdered extracts. Many alcoholic extracts exhibit a troublesome stickiness after keeping for a short time, arising from the absorption of moisture. This applies particularly to the alcoholic extracts, though many of the hydro-alcoholic often show a similar tendency. The authors therefore propose that extracts of this description should be in pulverulent form, exceptions being extracts containing volatile active principles and resins—*e.g.*, chamomile, Indian hemp, and jalap; or where the chief use of a preparation is as a pill-excipient or an ingredient in some liquid galenical—*e.g.*, gentian and liquorice. These, with the addition of ergot, constitute all the official extracts which cannot be produced as powders.

In the case of extracts containing alkaloids, the principle to be followed is to make a liquid extract or tincture of the drug, determine the alkaloids in a small portion of this, recover the alcohol, dry the extract, at first over a water-bath and subsequently in a hot-air oven at a temperature of 60° to 70° C., take the weight of the resulting extract when cold, and mix thoroughly by trituration with a sufficient quantity of a suitable powder to bring the extract down to the required standard. The product is then passed through a No. 20 sieve and finally enclosed in a well-corked or glass-stoppered wide-mouthed bottle. Of the several powders which have been proposed for use as diluents they select a vegetable powder (No. 40 or No. 60), preferably the powdered drug (dried at a low temperature) from which the extract is prepared.

Proceeding to deal with hyoscyamus the authors pointed out that some of the alkaloidal percentages recorded by foreign workers are much higher than any obtained by workers in this country. Thus E. Schmidt found 0.365 per cent. alkaloid in the stalks, and 0.286 per cent. in the leaves; L. Dohme gives 0.173 for the leaves; Beckurt's figure is 0.089 (average of four samples); A. W. Gerrard found in biennial leaves from plants grown in different parts of this country an average of 0.06 to 0.07 per cent., and for the tops 0.045 per cent.; Parke, Davis & Co. give for English-grown plants a maximum of 0.073, and J. C. Umney gives 0.07 to 0.1, with an average of 0.08. The present authors have examined sixteen commercial samples of the official drug, which showed a maximum of 0.120 per cent., a minimum of 0.064 per cent., and 0.088 per cent. as the average.

Speaking of the alkaloidal strength of the official extract of hyoscyamus, they quoted from Squire's "Companion" the statement that 15 lbs. of dried leaf represent 100 lbs. of fresh leaf, so that an average of 0.09 per cent. alkaloid in the former is equal to 0.0135 in the latter. Squire also states that 100 lbs. of fresh leaves (with flowering tops and young branches) yield 5 lbs. of extract, which would work out at 0.027 per cent. alkaloidal content in the extract. Some loss occurs in the making. A sample of extract sent to one of the authors in 1896 by Mr. W. G. Cross, of Shrewsbury, gave 0.15 per cent. alkaloid; and six samples examined by them in 1897 gave a maximum of 0.18 and a minimum of 0.13, with an average of 0.15, but Naylor and Bryant examined nine samples, giving an average of 0.24, with a maximum of 0.43 and a minimum of 0.14.

The authors next referred to alcoholic extracts. Two specimens prepared by themselves with 70-per-cent. alcohol gave an average of 0.23 per cent. alkaloid in the soft extract, or 0.30 per cent. in the dry. Another sample prepared with 45-per-cent. alcohol showed 0.25 per cent. alkaloid in the soft extract. They now submitted various data from records of other workers and their own experiments, showing how the percentage of alkaloid in the dry extract varies with the alcohol-strength of the menstruum, *e.g.* :

Menstruum ...	40%	50%	60%	70%	80%
Alkaloid ...	0·292	0·277	0·292	0·3[illegible]0	0·358

These results were obtained some years ago, and have since been confirmed. It will suffice to quote the most recent—viz., with dried English leaves, season 1903. In No. 60 powder this drug, assayed by Bird's belladonna-process,* gave 0.09 per cent. alkaloid.

Four hundred grams of the sample in No. 20 powder was moistened with menstruum, divided equally among four conical percolators, and percolated with 90, 80, 70, and 60 per cent. alcohol until 400 c.c. of percolate had been collected from each percolator. Percolation was continued until 100 c.c. more was collected in each case, and on assaying these it was found by the extractive and alkaloid contents that exhaustion was practically complete with 400 c.c. From the strong percolates the yields were as follows :

Menstruum ...	90%	80%	70%	60%
Alkaloid	0·0114	0·0196	0·022	0·0154
Dry extract ...	2·92	6·09	6·45	7·05
Percentage of alkaloid in dry extract	0·39	0·32	0·34	0·22

The figures for alkaloid and dry extract represent percentages based on the drug.

After referring to other results obtained by working on the 1-in-1 fluid extract principle, the authors submitted the following method of preparation :

> Take a good, carefully-dried sample of the official leaves (with flowering tops), reduce some of this to No. 60 powder, and determine the alkaloid by Bird's process. Reserve the remainder for the dilution of the dry extract.
>
> Reduce a larger quantity of the sample to No. 20 powder, and exhaust this by re-percolation with four times its bulk of 70-per-cent. alcohol. Determine the proportion of alkaloid in the finished tincture by the official process for the assay of liquid extract of belladonna or other reliable assay-process. Recover the alcohol from the remainder of the tincture by distillation, and dry the residue in a shallow, flat, tared dish—first over a water-bath, and finally in a hot-air oven at a temperature of from 60° to 70° C.—until the weight is fairly constant. Take the weight of the dry extract, calculate the percentage of alkaloid in it, and incorporate with it a sufficient quantity of the standard powder to give by calculation a preparation containing 0.2 per cent. alkaloid. Triturate until thoroughly mixed, pass through a No. 20 sieve, and transfer the powdered extract to a well-corked or glass-stoppered bottle. Preserve in a cool dry place.

Discussion.

Mr. Maben said there was not much to which exception could be taken in the process recommended, but the conclusions were not so obvious. According to Farr and Wright's own figures hyoscyamus-leaves contain 0.09 per cent. of alkaloid, so that the standard for the extract recommended is but double. It was a mistake to make belladonna extract of only 1 per cent of alkaloid, and this standard for extract of hyoscyamus would be in the same direction. According to Mr. Naylor's showing, the proposed strength is weaker than some of the green extracts of commerce. They ought to have at least as good an extract as the green extract. Manufacturers ought to be allowed to percolate to exhaustion and use acidulated water. The extract would then be free from hygroscopic tendency and stronger than 0.2 per cent. of alkaloid. The wholesale makers to whom Mr. Wright referred worked to a standard of one of extract to equal five of leaves, although it did not always come out at exactly that. If they are going to make such a weak extract it would be better to use the powdered leaves and not go to the trouble of making an extract.

Mr. H. W. Jones inquired whether the figures for alkaloid-yield for menstruum were correct : 40-per-cent. alcohol, 0.292 per cent. of alkaloid; 50-per-cent., 0.277; 60-per-cent., 0.292.

Mr. Wright : Those were figures actually obtained.

Mr. Jones, continuing, said the most valuable suggestion was that of diluting the extracts with the powdered drug. This would make the recognition of an extract a comparatively easy matter by means of the microscope. The sample of extract passed round the room [it was a pale-green dry powder] he considered perfect, and the suggestion to be one of the most valuable to practical pharmacy. The suggestion reminded him of the old abstracts which were in the United States Pharmacopœia, which, however, never took on as they clogged in a short time.

Mr. Alcock objected to the prolonged application of heat to this delicate thing containing hyoscyamine, which is so easily changed into atropine. He also objected to the method of dilution, considering that a soluble diluent, such as sodium sulphate, is far better. He quoted the case of extract of bran, in which the sulphate is used with advantage. His objection to the drug-powder was that it puts back debris which they aimed to get rid of in making extracts. As Schacht once put it, what we want is "drug *minus* debris, or bark *minus* woody fibre."

Mr. Gowen Cross said he was pleased to hear the good report on his hyoscyamus-juice, because it was expressed from leaves of the first year's growth. The results show that the first year's leaves are as active as the second.

Dr. Symes could scarcely follow Mr. Alcock's suggestion of adding sulphates to the extracts. He regarded foreign bodies as objectionable. Dried sulphates, he had noticed in the case of granules, had a tendency to re-absorb moisture.

Mr. Ransom suggested that the dried extract should be estimated rather than the tincture. It would be an advantage if the juice of the first year's biennial could be used in addition to the second year's leaves as the biennial crop was sometimes a failure for two or three years running.

Mr. James Grier (Manchester) said that from the medical point of view the introduction of extraneous matter is not desirable. Sugar of milk in extract of belladonna makes it unsuitable for some external applications, and he had received complaints on that score. He supported Mr. Alcock's remarks in regard to prolonged treating of the extract, pointing out dextro-hyoscyamine, which is ten times more active, and care must be taken in treating preparations containing it that it is not changed to the less active lævo form or atropine, this being done by heating and acids.

The President intervened at this point to propose Mr. David Kennedy, of Hawick, as a member of the Conference. Mr. Maben seconded, and the election was made.

Mr. Wright, in reply, said in considering the standard for the extract they had guarded against fixing it too high. It was thought that 0.2 per cent. of alkaloid was sufficiently low to admit of extracts of that strength being readily obtainable. As regards the use of the annual and biennial leaves, he did not think the commonly accepted view was correct. He had reason to believe that the leaves of the annual plant contained just as much alkaloid. This was a point well worth settling definitely.

Mr. MacEwan asked if Mr. Wright was justified in associating medicinal activity with the presence of alkaloid, the nature of which was not determined.

Mr. Wright replied that he was bound to hold that the activity of a drug depended on the alkaloid until the view was shown to be erroneous.

Mr. Martin added that the accumulated clinical experience was all in favour of the biennial leaves.

Mr. Wright added that he thought that point had been investigated by Gerrard some years ago.

Mr. Naylor gave an abstract of the next paper on

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* This process gives quite satisfactory results, 10 grams of the powder being taken for the assay. It is necessary to increase the volume of the solvent from 25 c.c. to 35 or 40 c.c. and to vary the quantity of potassium-carbonate solution used to moisten the powder, otherwise it is apt to form a clot. It is more satisfactory to repeat the final extraction of the alkaloid with acidulated water and recovery by means of chloroform: a purer alkaloid is thus obtained.

The Colouring-matters of Rosa Gallica.

By W. A. H. Naylor, F.I.C., and E. J. Chappel.

The petals of *Rosa gallica* have been the subject of investigation by chemists from time to time. Cartier found tannin, gallic acid, albumen, soluble salts of potassium, insoluble salts of iron, silver, and ferric oxide. Filhol described the method by which he isolated a yellow colouring-principle which he considered identical with quercitrin. He found traces only of true tannin, and noted the presence of cyanin, gallic acid, and a large proportion of uncrystallisable sugar. Rochleder found that the gallic acid is accompanied by quercitannic acid. Senier, in 1877, examined the petals with special reference to the red colouring-matter which until then appeared to have been neglected by chemists. From the results of his investigation he concluded that it is an acid which forms crystalline salts with the alkalies and amorphous ones with certain of the heavy metals. He prepared a lead salt, analysed it, and from the percentages of lead, carbon, and hydrogen obtained deduced the formula $Pb_2C_{21}H_{29}O_{30}$. Apart from the fact that it contained nitrogen as a confessed impurity, he does not appear to have adopted the usual means of satisfying himself of the homogeneity of the compound.

During the last ten years a number of yellow colouring-substances resembling quercitrin have been extracted from plants, a few of which, when subjected to a more searching examination, have proved to be other substances. With the knowledge of that fact, and also that a completer examination of the colouring-principles of *Rosa gallica* is desirable, the authors have reinvestigated the matter, and this communication is a preliminary one.

Isolation of Yellow Colouring-matter.—The petals were thoroughly exhausted with 90-per-cent. alcohol, and after distilling off the alcohol there was left a dark brownish-red syrupy liquid. This was diluted with water and repeatedly extracted with ether. The ether extract (A) was of a greenish-yellow colour. The aqueous residue (B) contained the red colouring-matter. The ether was distilled off from A, and the residue consisted of a thick greenish-yellow oil mixed with a quantity of a yellow powder. The oil was washed away with petroleum ether, and the insoluble portion treated with boiling alcohol and filtered while hot. Water, nearly boiling, was now added until turbidity was produced, and the liquid set aside. The substance which had separated out was collected on a filter, washed with water, redissolved in hot alcohol, and reprecipitated with hot water. The two filtrates were mixed and concentrated, and the crop that deposited was added to the bulk already obtained. It was then dried on the water-bath and extracted in a Soxhlet with chloroform, which removed a green substance. The residue insoluble in chloroform was crystallised from dilute alcohol. The final product was a yellow crystalline powder with a faint tinge of green. Examined microscopically, it presented the appearance of well-defined interlacing needles. At 220° C. it showed no sign of fusion, but the green tint had deepened. Its alcoholic solution gave with ferric chloride a brownish-black tint, and with lead acetate an orange-red precipitate. Dissolved in solution of potash, it gave a yellow to orange-brown solution, according to strength, and when warmed with sulphuric acid an orange-yellow liquid with a green fluorescence; on increasing the heat it became reddish, and finally a brown colour. It reduced Fehling's solution on boiling, but only after standing for some time. It did not appear to form compounds with acids, and with alcoholic potassium acetate it gave no definite precipitate. Analyses gave figures for C and H that accorded with the formula $C_{15}H_{12}O_6$.

Attempted Hydrolysis of the Yellow Body.—For this purpose both aqueous sulphuric acid and alcoholic solution of hydrogen chloride were used. No sign of reduction with Fehling's solution was obtained, nor did either give Molisch's reaction for carbohydrates. Attempts to obtain a crystalline acetyl compound by heating the yellow body with acetic anhydride were not successful.

Fusion of the Yellow Body.—The substance was heated with ten times its weight of potash at 210° to 230° C. When cold the melt was dissolved in water, and the solution neutralised with hydrochloric acid. From it ether extracted a substance which, after purification, was identified as phoroglucinol. The aqueous liquid was then acidified and again extracted with ether, which on evaporation left a brownish crystalline mass. This was treated with hot water, filtered, and the filtrate shaken out with ether. The ether on spontaneous evaporation yielded a cluster of large needles, still more coloured. Its aqueous solution gave a green colour with ferric chloride, which changed to orange-red on adding sodium carbonate. It did not reduce Fehling's solution, and was probably protocatechuic acid. This behaviour of the yellow body and its centesimal composition prove to demonstration that it is not quercitrin. The striking points of difference between quercitrin and the yellow body now isolated are :

1. Quercitrin readily hydrolyses, yielding a yellow crystalline product, quercetin, and a sugar which reduces Fehling's solution. Under the same conditions the yellow body hydrolyses with difficulty—if at all—giving red amorphous products and yielding no substance that reduces Fehling's.
2. Quercitrin gives a yellow precipitate with acetate of lead. The yellow body gives an orange-red one.
3. Quercitrin fuses to a brown mass at about 135°, but the yellow body showed no signs of fusion at a much higher temperature.

Isolation of Red Colouring-matter.—The aqueous residue (B) referred to above was considerably diluted with water and filtered. The filtrate was precipitated successively with zinc acetate and lead acetate. The respective precipitates were collected and well washed with chloroform-water. The yellowish-green lead precipitate was dried in alcohol, and decomposed by sulphuretted hydrogen, from excess of which the filtrate was freed by a current of carbon dioxide. After slow evaporation of the alcohol at a low temperature a red mass was left. The zinc precipitate was similarly treated, but the final residue was darker in colour. The red mass obtained from the lead compound was air-dried and treated with ether, which removed a quantity of a yellow substance. The red colouring-matter, purified so far as was attainable by the withdrawal of foreign bodies by solvents, was amorphous, deep red, and soluble in water and alcohol, the solutions being deepened on the addition of diluted sulphuric acid. Its solution did not effervesce with sodium carbonate. Dilute potash solution changed it to deep red with a green fluorescence, an excess changing it to a yellowish brown.

Senier obtained the red colouring-matter by exhausting the petals first with ether and then with alcohol. The alcoholic solution he precipitated with lead acetate, suspended the collected and washed precipitate in rectified spirit, and decomposed it either with sulphuretted hydrogen or dilute sulphuric acid. From this alcoholic solution he claimed to have obtained microscopic crystals of sodium, potassium, ammonia-potassium and ammonia-sodium salts of the red colouring-matter. The authors were unable to confirm this observation, all their attempts to obtain crystals having failed. They are preparing large quantities of both the yellow and red substances for a more extended examination.

There was no discussion on this paper.

It was now past the half-hour, and the members adjourned for tea in the Montgomery Hall, beneath the Town Hall.

Third Session, Wednesday Morning, August 10.

The session began shortly after ten, the first paper being

Calumba Infusion and Concentrated Solution.

By F. H. Alcock, F.I.C., F.C.S.

The author has been in the habit, after determining the amount of total solids in such preparations as these, to ascertain the amount of ash left after gentle incineration, and to note qualitatively by litmus-papers whether the ash is greatly or feebly alkaline. As a platinum dish is convenient for this, not much extra time and trouble are involved. With these calumba preparations alkalinity of ash appears to be relatively large, and during the process of ignition deflagration, as of nitrates, has been observed. A qualitative examination of the ash showed that the alkalinity is due chiefly to lime and potash.

Following this up the author made a number of infusions of B.P. strength, testing the acidity of the ash-residues with decinormal sulphuric acid, using methyl orange as an indicator, and his results are best summarised in the following table :

Preparation	Str'ngth	Time	Qty. Used	Solids	Ash	Decinormal Acid Required
		Hr.	C.c.	Gram	Gram	C.c.
Infusion ...	1 : 20	½	50	0·273	0·064	—
Infusion ...	1 : 20	½	100	0·612	0·133	10
Infusion ...	1 : 20	¼	100	0·250	0·074	3·5
Infusion* ...	1 : 20	½	100	0·610	0·150	10
Infusion as for conc. solution ...	1 : 20	24	100	0·712	0·227	13
London sample of conc. solution ...	1 : 2	—	10	0·475	0 167	14

The sample marked with an asterisk was made in order to ascertain whether reliance could be placed upon the figures for the same sample of root after a period of nine months had elapsed. It was then found that for the infusion B.P. the results were almost identical with those obtained nine months before.

Discussion.

Mr. Martin did not gather whether the B.P. infusion used was made by maceration with mixed spirit and water or with water only. It is important to know what difference there is between the aqueous and spirituous infusion.

Mr. G. E. Perry thought that as concentrated infusions are so largely used, it would be as well if they were sent out standardised to a definite amount of extractive, the amount being stated on the label. In this way it would be possible to get a closer approximation to fresh infusions.

Dr. Symes took it that the 1—7 concentration was referred to, not the 1—9 of the B.P. The former are still generally used, and he thought the B.P. authorities would be glad to know the consensus of opinion on the degree of concentration found to be most convenient.

Mr. Robert Brodie (Glasgow) said he always exhausts the root completely : there are no volatile principles and no alkaloid to standardise to. His practice is to exhaust the root and evaporate to make a 1—7 concentration.

Mr. Job Preston said he found considerable variation in the sp. gr. of a liquid in the upper and lower layers. The difference made it always advisable to shake the bottle of infusion before dispensing so as to get uniform results.

Mr. Gadd thought that perhaps too much stress was placed on the amount of extractive in such preparations as infusions. Mr. Alcock's results, though not easy to understand, were, as far as he had calculated, fairly uniform. He had found, from an examination of ten samples made in his company's laboratory, that the extractive varied from 3.5 to 6.3 per cent., the mean result being very similar to those obtained by Mr. Alcock.

Mr. Alcock reminded Mr. Martin that he had followed the B.P. process, which does not involve the use of mixed spirit and water at the beginning of the process. As he wanted to see the rate at which the extractive was extracted by the solvent, he was very careful to mix the liquid intimately before taking the samples. In water-analysis he had found it always advisable to shake the winchester of water well before taking a sample, as analyses made from a sample taken before shaking varied in results from an analysis of a sample taken after shaking. Calumba does contain an alkaloid—berberine—but it is a most difficult substance to deal with, as its salts are insoluble and not easy to extract.

The next paper was on

Determination of Boric Acid in Cider, Fruits, &c.

By (the late) Alfred H. Allen and Arnold R. Tankard.

Traces of boric acid naturally occur in certain plants. At the outset of their experiments upon the presence of preservatives in cider the authors confirmed previous observations that the acid is present in apples, pears, quinces, grapes, and pomegranates. Hence boric acid in cider, perry, wine, etc., cannot be regarded as an adulteration unless the amount is materially greater than can be fairly ascribed to natural causes.

The detection of boric acid in cider and fruits can be readily effected by evaporating 20 c.c. of cider or apple-juice to dryness and igniting the residue, or by directly igniting 25 grams of apple or other fruit. The ash is rendered distinctly acid to litmus with dilute hydrochloric acid, a piece of turmeric-paper partially immersed in the liquid, and the whole evaporated to dryness in a flat porcelain dish. The residue is further dried in the water-oven for a short time. In the presence of boric acid, the tumeric-paper acquires a brownish-red colour, which on being moistened with a drop of caustic soda is changed into a variety of colours, chiefly green and purple.

The quantitative determination of the acid in cider and fruits is very troublesome owing to the minute quantity present, and the determination is complicated by the presence of phosphates which render inapplicable the direct employment of R. T. Thompson's well-known process ("J.S.C.I.," 1893, page 433), in which the solution is first made neutral to methyl-orange and then titrated with caustic soda and phenolphthalein in the presence of glycerin, the end-point of the titration corresponding to $NaBO_2$. The unsuitability of Thompson's method without modification in the presence of phosphates is due to the fact that while phosphates of the formula MH_2PO_4 are neutral to methyl-orange, they are acid to phenolphthalein. The authors have been unable to overcome the difficulty. Parmentier's process ("J.C.S.," lx., 1551), based on the solubility of borates in a solution of ammonium nitrate is quite useless for this special purpose. After a large number of experiments the following method for the determination of boric acid in cider, etc., based on the moderate solubility of calcium borate in water, was devised :

> About 100 c.c. of cider or other liquid is evaporated to dryness with a few cubic centimetres of a 10-per-cent. solution of calcium chloride; or in the case of fruits, about 50 grams weight is cut up into small pieces and the solution of calcium chloride poured over the mass, which is then evaporated to dryness. The dry residue is well charred, boiled with about 150 c.c. of distilled water, and the liquid filtered. The carbonaceous residue is thoroughly incinerated at a moderate temperature, and when cold boiled with 150 c.c. of water and allowed to stand in the cold for some hours, or preferably overnight. The liquid is then filtered cold and the filtrate added to the first extract.* The mixed aqueous extracts are next evaporated to 25 or 30 c.c., and after cooling neutralised by decinormal acid, using methyl-orange as the indicator.† An equal volume of glycerin is next added and the liquid titrated with phenolphthalein and one-twentieth normal caustic-soda solution (free from carbonate). About 100 c.c. more glycerin should now be added, when if the titration is complete the red coloration will remain. Each cubic centimetre of the one-twentieth normal solution of caustic soda required represents 0.00175 gram of boric anhydride, B_2O_3; 0.0031 gram of crystallised boric acid, H_3BO_3; or 0.004775 gram of crystallised borax, $Na_2B_4O_7+10H_2O$.

The process gives good results when the boric acid present in the sample taken is not less than 0.005 gram.

The authors also examined the well-known method for the determination of boric acid based upon the volatility of methyl borate, and find the following to be the best method of operating :

> A suitable quantity of the substance under examination is treated with calcium-chloride solution as already de-

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* It is desirable to extract the residue for a third time with hot water, allowing the liquid when cold to stand for some time before filtration. This third extract, when titrated separately, will generally be found free from boric acid. If not, the amount found must be added to that already extracted.

† Care should be taken that all the borate is in solution before the titration is begun.

scribed, and well charred, and the main portion of the salts extracted with about 50 c.c. of water. This aqueous extract is transferred to a distillation-flask of about 100 c.c. capacity, and cautiously evaporated nearly to dryness over a naked flame. Meanwhile the charred residue is incinerated, the ash (nearly white) moistened with 2 c.c. of strong sulphuric acid, and the mixture warmed. When the evolution of hydrochloric acid is nearly at an end, the acidified residue is transferred to the distilling-flask containing the evaporated aqueous extract. The last portions are washed with methyl alcohol,* the flask immersed in boiling-water, and the liquid distilled almost to dryness. A further addition of 100 c.c. of methyl alcohol is then made, and the distillation repeated. As many as six such treatments are usually required. Between each two distillations the residue in the flask should be allowed to cool before the next addition of methyl alcohol is made. The residue finally contained in the distilling-flask should be tested by the flame-reaction with alcohol to ensure that the whole of the boric acid has been volatilised. If this is not found to be the case, the distillation should be repeated once or twice more.

The alcoholic vapours are passed into 25 c.c. of water contained in a flask, the end of the condenser-tube dipping into the liquid. When the process is completed, the distillate is evaporated over a water-bath until free from alcohol. By this treatment the methyl borate is hydrolised and the boric acid left in a free state. The residual liquid is diluted with a little water and rendered exactly neutral to methyl-orange. An equal volume of glycerin is then added, and the liquid titrated with one-twentieth normal caustic soda and phenolphthalein, as already described. The glycerin used in these processes should be rendered neutral to phenolphthalein just before use, as it is generally slightly acid in reaction.

In many of the processes already in use for the separation of boric acid by distillation, the methyl borate is distilled into a solution of caustic soda, and after the evaporation of the alcohol the aqueous liquid is titrated in the usual way. The authors found the results so obtained always above the truth.

They next submitted results obtained in a series of experiments made to test the accuracy of the processes here described. A known weight of crystallised borax was added either to (A) a mixture of calcium chloride, magnesium sulphate, and sodium sulphate, or to (B) a known weight of apple. In the latter case, an exactly similar portion and weight of the same apple was treated with calcium chloride and the boric acid determined, and deducted from that found in the other portion to which borax had been added.

A. 0.2 gram of borax taken in two experiments: 0.198 and 0.204 found by extraction method.

B. 0.02 gram of borax taken in two experiments, with 50 grams of apple: 0.019 and 0.02 found by extraction method.

By distillation method 0.2 gram borax taken *per se* and 0.197 found; 0.02 taken and 0.022 found; 0.2 taken with sodium phosphate, and 0.201 found; and 0.02 taken, and 0.023 found.

Reference was next made to Richmond and Harrison's method ("Analyst," 1902, xxvii., 179) for boric acid in butter which is unsuitable for cider and fruits, and to Cassal and Gerran's method ("Brit. Food Journal," October, 1902). The following table shows the proportion of boric acid contained in various fruits and ciders, etc., examined by the authors :

Material Examined	Boric Acid (H_3BO_3) found.
1. Apple (Norfolk) ...	0.009 per cent.
2. Apple (Foxwhelp) ...	0.013 ,, ,,
3. Apple (Old Foxwhelp)	0.011 ,, ,,
4. Pear, No. 1	0.007 ,, ,,
5. Pear, No. 2	0.016 ,, ,,
6. Quince	0.016 ,, ,,
7. Pomegranate	0.005 ,, ,,
8. Grapes	0.004 ,, ,,
9. Norfolk cider	0.009 gram per 100 c.c.
10. Hereford cider	0.017 ,, ,, ,,
11. Devonshire cider ...	0.004 ,, ,, ,,
12. Apple-juice (Devon) ...	0.004 ,, ,, ,,

The two processes described are suitable for determining boric acid in a considerable number of other substances.

Before the paper was taken the President and Mr. Tankard made sympathetic reference to the death of Mr. Allen.

Discussion.

Mr. Edmund White said it is curious that many of these fruits contain preservatives naturally. Salicylic acid is very widely distributed in the vegetable kingdom. Analysts should carefully distinguish between the naturally occurring and the added preservative. He asked whether the distillation of the methyl-borate solution was not likely to result in loss of boric acid either by evaporation or by hydrolysis.

Mr. Alcock said boric acid had been met with in B.P. sherry. In the case he was referring to it was first met with in vin. ipecacuanhæ, and traced back to the use of an earth containing a borite for clarifying the sherry. This was interesting to pharmacists, as when boric acid is found in ipecacuanha wine it need not necessarily have been added to the wine by the manufacturer.

Mr. H. W. Jones reminded the meeting that boric acid has also been shown to be a natural constituent of grapes.

Mr. J. R. Hill referred to the loss of boric acid by evaporation. In his experience boric acid is very volatile in the presence of water, and when distilled by steam. The check method used by the authors of the paper was not quite conclusive, as borax, a fixed salt, is used in place of boric acid.

Mr. Brewis anticipated that there would be loss of boric acid by evaporation, but some of the analytical data in the paper seemed to show that the results came out somewhat high.

Mr. Tankard, in reply, said it is quite true that salicylic acid occurs naturally in fruits. In Germany this has been recognised, and an analytical process devised which would detect larger quantities than would be likely to be present naturally. As to the volatility of the borate his experience was somewhat unusual, in that he found even an aqueous solution of boric acid did not show any difference analytically through volatility.

The President, after moving a vote of thanks to Mr. Tankard, mentioned that letters of apology for absence had been received from Mr. Walter Hills, Mr. J. F. Harrington, and Mr. Payne, of Belfast. The next paper was

Notes on Radio-activity.

By W. Harrison Martindale, Ph.D., Phar. Chem.

The property of radio-activity was first discovered by Becquerel in 1896 for uranium-containing minerals and chemicals of every kind. The rays from uranium salts without the intervention of sunlight can be shown photographically to penetrate aluminium, bone, glass, black paper, etc., at a distance of several inches, and thorium nitrate (the constituent to the extent of 98 per cent. of Welsbach mantles) produces photographic effects.

Of late there has been much discussion as to the change that the radium atom is undergoing and the probability of uranium being its parent. Rutherford suggested that radium is analogous to the first bodies, designated uranium-x and thorium-x, resulting from the break-up of uranium and thorium, and not to these elements themselves. If ammonia be added to thorium nitrate the hydroxide is found on separation to have lost more than half its activity, whereas the filtrate from this hydroxide on evaporation to dryness possesses the bulk of the activity. This residue (the thorium-x soluble in ammonia) is minute and, weight for weight, is 1,000 times as active as the original thorium nitrate. The precipitated thorium hydroxide regained its activity as fast as the thorium-x lost it; furthermore, the activity of the precipitated hydroxide added to that of the thorium-x is always equal to that of the original thorium nitrate before the process. Thorium-x loses its activity in a month. It produces an emanation, and this gas-like body changes into the matter producing the excited activity.

Uranium similarly yields a uranium-x, but this does not give rise to an emanation or to excited activity. As yet a radium-x is not known. The amount of radium in pitchblende leads scientists to think that there is a direct relation between the amount of radium developed and the time taken to decay. It has been found * that old uranium salts appear to contain more radium emanation than those freshly made.[1] Many investigators are instituting experiments to watch the gradual development of radium in uranium salts and minerals. Soddy[2] has forestalled the suggestion by finding the quantity was less than 10 mgm. in twelve months from 1 kilo. of uranium nitrate. Soddy and Ramsay (*ibid.*) showed that less than one-thousandth part of radium changes per annum, and the rate of change of uranium may be assumed to be one million times slower. Soddy concludes that less than one ten-thousandth part of the theoretical quantity is formed in the first year and inclines to the belief that uranium is not the parent of radium. An American investigator[3] found an agreement between the quantity of uranium and of radium present in certain ores. Joly[4] inclines to the view that radium may be an atomic combination of radio-active products with some of the heavy metals found in pitchblende—it would therefore represent the synthesis rather than the disintegration of an element. Strutt[5] found the proportion of radium and uranium in minerals constant. Radium has undoubtedly been produced since the formation of the mineral; Ramsay and Soddy's determination of the rate of production of the emanation proved this, and Strutt claims that this proves that uranium must be the parent of radium.

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* Ordinary wood-spirit of good quality, purified by redistillation over caustic potash, is suitable for this purpose.

* A list of the publications here referred to is appended to the paper

In considering a few particles of radium we realise that most of the atoms behave as if they were permanent. None of them are, of course, really so, though only very few are breaking up from moment to moment. A writer on the subject[6] imagines one in every million billion atoms of thorium to throw out per second a fraction of its mass—*i.e.*, the *alpha*-ray—the remainder of that atom becomes the thorium-x; this again throws off another part of its mass, becoming the atom of the emanation. This changes into the matter producing excited activity, and so on. It would take at least a million years for one-thousandth part of the mass of thorium or uranium to be changed. The activity of radium being a million times greater than that of thorium, about the same proportion of this body changes as of thorium—in other words, the life of radium is not more than a thousand years.

It is suggested by Rutherford[7] that after the emission of the *alpha* particle the rest of the radium atom is radium-x; this then disintegrates into an *alpha* particle and the emanation, which in turn breaks up, expelling more *alpha* particles and changing into the matter which causes excited activity, the final product being perhaps polonium —the radium "atom" consisting, therefore, of the polonium atom and about six *alpha* particles; but these, when their charge is neutralised by a negative corpuscle, are believed to become helium atoms, with the result that the radium compound radical would have the formula $PoHe_6$. Polonium has, however, been obtained free from radium (spectroscopically). Soddy[8] states that 25 per cent. of the entire *alpha* radiation comes from the radium, and the remainder from the emanation and the matter causing excited activity.

Atomic Weight.—Madame Curie's figure of 225 may require confirming, the spectroscopic value being 257.8. A recent writer in "Nature"[9] places the theoretical value nearer 225 than 257. Madame Curie placed radium in the Mendeléeff Periodic Law after barium, with the alkaline earths already containing uranium and thorium. Mendeléeff[10] is not inclined to the disintegration theory. In endeavouring to fit in argon and helium and other new elements in his periodic system he came to the conclusion that the "ether" itself must be atomic and be placed in the group argon and helium, and offered the opinion that the energy of radium—its light and electric properties—is simply due to the emission of the "ether" atoms.

Rays.—The radio-active elements are by most scientists regarded as slowly breaking up, and at a definite uniform rate for each individual body. This takes place in stages; the emanation of radium and thorium, and the active matter resulting from further change of the latter causing induced activity, are transitional forms between heavy and light bodies, and have been called metabolons. On separating the metabolon from the original matter the latter goes on accumulating the transitional body. The amount of helium obtained by Ramsay and Soddy from radium was a mere bubble.

The author quoted Sir Oliver Lodge's classification of the various types of rays used in medicine,[11] their effects and sources—viz., cathode rays, x rays, α rays, β rays, γ rays, brush discharge, radiant heat, light, ultra-violet rays, and N rays (?).

The properties and peculiarities of *alpha* rays, *beta* rays, and *gamma* rays were explained, and it was noted that a marked difference[12] has been observed between the relative conductivitiy of gases for the *gamma* radium rays and the x rays.

A useful application of the ionising effects of radium has been devised by a worker[13] at the Botanical Laboratory in Dublin—namely, to prevent the electrification of sections cut in paraffin, their adhering, curling-up, etc., a tube of radium salt may be fixed on to the microtome-knife with highly satisfactory results.

The Emanation.—This gaseous body can be passed on from one vessel to another, and can be condensed by low temperature into solid or liquid matter. Rutherford claims that a cubic inch of it would probably melt a glass tube containing it, and as it possesses three-quarters of the power of radium, a few pounds of it would drive a ship across the Atlantic. Seventy tons of radium would, however, be necessary to produce each pound of emanation. Ramsay and Soddy found helium occluded in cleveite and other radio-active minerals. These investigators[14] found that 50 mgms. of radium produce 0.1 cubic mm. of helium in sixty days. This quantity weighs 0.000018 mgm., hence 1 gram of radium bromide should give 0.0022 mgm. per annum.

Heat.—The heat-energy from 1 gram of uranium oxide was estimated in 1901 as at least 0.03 calorie per annum. This does not accord with the present estimate of the heat emitted by radium, which is at the rate of 100 gram calories per gram per hour. More than two-thirds of the heating-effect is not due to radium at all, but to its emanation, and to the product of this latter body. Another statement of the theory is that the heat is due to the radio-active substance being bombarded by its own *alpha* rays.

Estimation of Activity.—The time occupied by uranium to discharge an electro-negatively charged electroscope is noted by a watch, and is designated "unity"—a telescope and a micrometer scale are necessary for the purpose. Glew's instrument[15] is simple and reliable. This the author described and demonstrated. By this instrument the *beta* and *gamma* rays are not measured directly: what is measured is the ionisation of the air produced by 1 per cent. of the total radiation.

Polonium.—Soddy claims that Markwald's radio-tellurium is identical with polonium, and the author thought Soddy has vindicated his position. Madame Curie states that a specimen of bismuth nitrate containing polonium lost half its activity in eleven months. By employing a glass screen of zinc sulphide, as suggested by Glew,[16] the scintillations from its *alpha* radiation produce a good effect on a black ground. By using this screen and a revolving wheel Glew found the duration of a scintillation to be less than one fifty-thousandth of a second.

Radio-activity of the Air.—It has been demonstrated[17] that the ground air is often radio-active—the supposition is that substances producing a radio-active emanation similar to that of radium are distributed among the constituents of the soil in question. A large boiler full of air was kept closed for six weeks, and the air was then examined without any activity being found to have developed, proving that it comes from the soil in all cases.

Radio-activity of Mineral Waters and Minerals.—The activity of the gas collected from the source of Buxton water was found to fall to half value in about three and a half days. It has been suggested that the gas thus collected might be employed therapeutically. Strutt[18] read a paper before the Royal Society dealing with this matter and the examination of minerals for radio-activity. His method for the latter is simply to heat the mineral in a crucible, and to examine the rate of decay of the emanation evolved. A mineral called monazite from Norway, though containing no radium, yielded helium in fair quantity. Bath water contains a large proportion of sulphates. Radium sulphate is probably only soluble to the extent of one in several hundred thousand parts of water; it follows, therefore, that the radium is found here chiefly in the deposit, and not in the water. It was calculated roughly that 0.8 gram of radium is deposited per annum in the Bath spring, the total deposit of mud, etc., being about 500,000 kilos. per annum. The volume of gas yielded is about 100 cubic feet per diem. This had previously been found to contain helium to the extent of one-thousandth of its volume—*i.e.*, 3 litres per diem, or 1,000 litres per annum. The spring probably draws its supply from radio-active minerals. Droitwich brine[19] on boiling yielded a radio-active gas; and Russian mud-baths possess radio-activity,[20] and have an inhibitory action on bacterial growth. Reference was also made to the radio-active mineral from Ceylon.

Therapeutic Use.—The *beta* radiation has an inhibitory action on many organisms—*e.g.*, those of typhoid, anthrax, diphtheria, and *B. coli.* Bacterial colonies exposed to the *beta* and *gamma* rays emitted by 10 mgms. of radium bromide and removed to a photographic plate affected the plate even through a double layer of lead foil.[21] Sir Oliver Lodge inclines to the opinion that radium for medical purposes will replace almost every source of radiation. He believes the beneficial action on rodent ulcer is due to the oxidising power of air ionised or ozonised by the rays. This he concludes is the reason why deep-seated cancer has not as yet been benefited. The thorium emanation[22] has been tried in phthisis, and some satisfactory results are recorded. Macleod[23] has tried radium in lupus vulgaris, rodent ulcer, epithelioma, and in two cases of cancer of the cervix uteri, and is convinced that the *beta* rays have an inhibitory effect on bacteria. In rodent ulcer radium acts like a charm. Other workers have used radium in psoriasis, epithelioma of the orbit, orbital neuralgia, acute iritis, and in superficial malignant diseases, with disappearance of the growth, and in cancer of the breast with relief of pain. Macintyre[24] has reviewed the recent work on *x* rays and radium, and is of opinion that polonium may have importance therapeutically. Reginald Morton[25] confirms the therapeutic utility of radium, and two cases of cancerous throat are stated by Walsh and Morton to have greatly improved under the rays. The glass tubes suggested by Mackenzie Davidson are the most satisfactory.

The Radium Electroscope was exhibited and described. It has been arranged by Glew[26] to ring an electric bell or print a record on a Morse tape at each contact. In concluding the author suggested that these active substances should be included in the poisons schedule. The following is a list of the references noted in the foregoing :

[1] Whetham, "Nature," May 5, 1904, page 5; [2] Soddy, "Nature," May 12, 1904, page 30; [3] Boltwood, "Nature," May 26, 1904, page 80; [4] Joly, "Nature," May 26, 1904, page 80, also July 14, page 246; [5] Strutt, "Nature," July 7, 1904, page 222; [6] Bottone, "Radium, and All about it"; [7] Rutherford, "Nature," July 14, page 241; [8] Soddy, "Nature," February 11, 1904, page 343; [9] Sutherland, "Nature," April 28, 1904, page 606; [10] *C. & D.*, 1904, page 579; [11] Sir O. Lodge, "Series of Lectures to Medical Practitioners on Physics Applied to Medicine," "Med. Elect. and Radiology," March, 1904; [12] Eve, "Nature," March 10, 1904, page 436; [13] Dixon, "Nature," June 30, 198; [14] "Chem. News," May 27, 1904, page 225; [15] Glew, "P.J.," 1904, page 440; [16] "Archives Roentgen Society," June 1904; [17] Elster and Geisel, "Nature," December 17, 1903, page 154, and March 10, 1904, page 444; [18] Strutt, "Nature," March 17, page 473; [19] "L.," 1904, 1010; [20] "L.," 1904, 675; [21] "P.J.," 1904, 675; [22] "L.," 1904, 1121; [23] "L.," 1904, 1366; [24] "B.M.J.," 1904, 933; [25] "B.M.J.," 1904, 941; [26] Glew, "Nature," July 14, 1904, page 246, *C. & D.*, July 30; "Photo. Jl.," 1899, page 179.

DISCUSSION.

Dr. Symes gave particulars of a case in which Dr. Stockford Taylor, of Liverpool, had used the electric-light apparatus on a cancerous growth. Up to a certain point it improved, then the improvement ceased. Dr. Taylor then began radio-active treatment, and the reduction of the cancerous growth commenced again. Dr. Symes believed that this was the first case of this kind, and one of considerable interest, showing the advantages of the use of radio-activity as compared with the electric-light treatment.

Mr. Rutherford Hill said the interesting paper suggested that an evening lecture and demonstration could have been arranged. The evening might then even have been spent in a more profitable manner than the previous evening. (Laughter.) The subject of radio-activity is one which dispensing chemists would do well to become acquainted with. The medical profession naturally turn to the chemist for assistance in this department, and he (the speaker) had sometimes heard the complaint that the chemist is not always so much in touch with the subject as he should be. The Pharmaceutical Society are doing wisely in setting aside a room for physical apparatus at Bloomsbury Square, as if there is any subject with which chemists are less acquainted than another, it is physics.

Mr. MacEwan regretted that Dr. Martindale had treated so cavalierly Mendeléeff's theory in explanation of radio-activity and the phenomena peculiar to radium and analagous substances. He explained the theory which has led to the enunciation that the ether is the lightest form of matter and universally present, but has a small degree of attraction or affinity, and that it is its emanation from substances like radium, in which it is temporarily occluded, that causes the phenomena attributed by others to breaking-up of elements.

Mr. Clague emphasised the service done by Dr. Martindale in bringing forward his paper. He thought they might leave Mendeléeff and Dalton alone, and trust to the fact that they will survive the little buzz which at present surrounds their theories and come off victorious. He (the speaker) was glad that Dr. Martindale took the line that the pharmacist is the man to give assistance to medical men in the matter of the medicinal use of radio-active substance. In the part of the country from which he came coal is the energiser used, and he had not much fear that radium will replace it for the present. As to the vessel that is to cross the Atlantic, he hoped none of those present would be on board, as the ship might just as well go to the bottom. These bodies seemed either to recuperate their energy or change into other substances.

Mr. Tyrer noted that Dr. Martindale did not claim originality in his paper, but much of the best work done is the scientific compilation of published papers and for that they all owed Dr. Martindale the best thanks. Mr. Tyrer then spoke of the part he had taken in working up the raw material for Sir William Ramsay. If scientific men remained imaginative, and did not come down sometimes to the laboratory and apply the mysteries of their craft, their work would be useless to the world. Mr. Tyrer then referred to the working-up of samarascite, gadanite, monazite, and lastly the curious new mineral from Ceylon. Professor Dunstan published in "Nature" the result of an analysis of a Ceylon mineral which he (the speaker) at once recognised as the same that he was examining in his own laboratory. This mineral was found to be photographically active in a high degree, and gave off an astonishingly large quantity of pure helium. A curious thing was that the proportions of the components of the mineral were on analysis found to be the reverse of Professor Dunstan's results, the thorium being present in quite a small proportion. Sir William Ramsay, in testing the thorium, found it only answered in a degree to the known tests for thorium, and he (Sir William) is of opinion that several new bodies are present in this residue. His (the speaker's) work consists in getting all the residual radio-active minerals together, and recently Sir William Ramsay, talking about the presence of iron in these residues, found that the substance thought to be iron gives a red sulphide, and is probably a new mineral.

Dr. Martindale, in reply, said he would gladly give a demonstration to anyone interested in the subject of his paper. The Cornish pitchblende was not of much value from a radio-active point of view. As the temperature of radium is only 2° C. warmer than the surrounding atmosphere and the temperature is maintained even when surrounded by liquid hydrogen, the point raised by Dr. Symes is not of much importance. The physical side of the question raised by Mr. Hill is of much interest, but some of the mathematical physics were difficult to understand, as they hardly came within the scope of the pharmaceutical chemist. As to Mr. MacEwan's reproach of the neglect of Mendeléeff's theory, it is assumed that bodies are always changing—gold, for instance, is changing into copper—(laughter)—and hence physicists cannot accept definite conclusions. Dr. Martindale also referred to the valuable technical work of Mr. Tyrer.

Mr. J. Rutherford Hill was then called upon to read the following :

A Simple Mode of Preparing Synthetic Populin

By Leonard Dobbin, Ph.D., and Alex. D. White, D.Sc.

Benzoyl-salicin, or populin, occurs naturally in the leaves and bark of various species of *Populus*, and was prepared synthetically, in 1870, by Schiff, who obtained it by three different methods :

1. From the product obtained by the prolonged interaction, at a comparatively low temperature, of salicin with a considerable excess of benzoyl chloride. This product contained di- and tetra-benzoyl-salicin, together with unchanged salicin and benzoyl chloride.
2. From the product obtained by gently heating together salicin and benzoic anhydrido until fusion took place, then cooling the liquid. Boiling water extracted salicin, populin, and benzoic acid from the resulting colourless glassy mass, and on ovaporating the aqueous extract, benzoic acid and populin crystallised out first. As tho latter alone is soluble in ether, it was easily separated from the benzoic acid. The portion of tho fused mass which did not dissolve in boiling water consisted of di- and tetra-benzoyl-salicin.
3. By the reduction (by means of sodium amalgam) of benzoyl-helicin, a substance obtained from helicin by interaction with benzoyl chloride. Helicin itself is a product of tho oxidation of salicin by means of dilute nitric acid.

Schiff stated that his synthetic populin was identical in reactions and physical properties with the natural product examined by Piria, but that it persistently retained the odour of benzoic compounds, whereas natural populin is odourless.

The authors wished to prepare populin in considerable quantity, and tried Schiff's second method, but found the yield to be small, as a large proportion of the salicin is converted into the di- and tetra-benzoyl derivatives. They then took advantage of the Schotten-Baumann reaction,* which has been most successfully employed for the introduction of the benzoyl group in other cases, and consists in the treatment of the substance into which it is desired to introduce this group, with benzoyl chloride in presence of aqueous solution of potassium hydroxide. To prepare synthetic populin on the small scale by aid of this reaction they dissolved 20 grams of salicin in a litre of boiling water, cooled the solution, and introduced it into a Winchester-quart bottle. This solution was made alkaline with potassium hydroxide in small quantity, then 10 grams of benzoyl chloride was added from a burette, a few drops at a time. The bottle and its contents were shaken vigorously until the added quantity had completely disappeared. A few drops more were then added, the shaking repeated, and so on, care being taken to add potassium hydroxide from time to time to prevent the liquid from becoming more than slightly acid at any stage of the addition of the benzoyl chloride. On account of its very sparing solubility in cold water, populin began to separate almost at first, and by the time the benzoyl chloride had all been added, a bulky precipitate had been deposited. This was removed by filtration, washed with water, dried, and powdered, and was then extracted with ether, which dissolved some tetra-benzoyl-salicin out of it. The residue, insoluble in ether, was boiled with about a litre of water, and the rapidly filtered solution deposited, on cooling, a voluminous, finely crystalline precipitate of populin, which was collected and dried, and was then recrystallised from hot alcohol.

The populin so prepared was pure white and odourless. Its melting-point was 180° C., corresponding with that of Piria's natural populin, and, after drying at 100° C., it yielded, on combustion, numbers agreeing with Piria's formula, $C_{20}H_{22}O_8$.

Carried out on a larger scale and with effective mechanical stirring, the process was found to give most satisfactory results. It is essential, however, that the shaking should be very efficient, since, otherwise, drops of benzoyl chloride very readily become entangled in the precipitated populin and are not brought properly into contact with the dissolved salicin.

To compare the synthetic product with natural populin, a small quantity of the latter (manufactured by Merck from the leaves and bark of *Populus nigra* and *P. tremula*) was procured. This preparation had a very slightly yellowish colour, and was found to melt below 175° C. On recrystallisation, however, first from boiling water and then from hot alcohol, a sample was prepared from it which melted at 180° C., and behaved in every other respect exactly as the synthetic populin did.

The President, in moving a vote of thanks to the authors, said the synthetic production of articles like this would be work for pharmacists in the near future, and for that reason they were pleased to have such papers at the Conference.

The next paper read was on

A Liquid Linimentum Potassii Iodidi cum Sapone.

By Henry Williams Jones, F.C.S.

Linimentum potassii iodidi cum sapone was introduced into the British Pharmacopœia in 1867, on the recommendation of Dr. Rumsey, of Cheltenham, then a member of the General Medical Council. The original recipe was given to Dr. Rumsey by Mr. Nathaniel Smith, also of Cheltenham, who copied it from the "form-book" of the business with which he was connected. The preparation had been supplied locally for some twenty years previously. In the 1867 Pharmacopœia hard soap was directed to be used, and from the variety of the results produced by different workers, the mode of preparation was generally condemned. Mr. N. Smith pointed out in 1870 that curd soap is the best variety to use, and the formula given in the "Year-book of Pharmacy" of that year was adopted in the British Pharmacopœias of 1885 and 1898. The liniment still varies in appearance as sent out by different houses, and a request made some time ago, to the firm with which the author is connected, to supply it in a liquid state, caused him to form the opinion that a fluid preparation would be desirable. In The Chemist and Druggist, August 28, 1886, Mr. A. L. Doran gave a formula for this in which soft soap is employed. This gives a liniment similar to, but thinner than that produced by Tichborne's process, in which the "pectising oleate" is formed by the direct combination of oleic acid and potassium carbonate. For a more liquid preparation than Doran's the use of a comparatively strong spirit was the only alternative, and the following formula was found to give a liniment resembling ordinary soap liniment in appearance. Rubbed on the skin it leaves a film which has been considered fully satisfactory in its properties and action. To shorten the appellation of the liniment the author proposes to call the modified form

Linimentum Potassii Iodidi.

Soft soap	2	oz.
Iodide of potassium...	1½	oz.
Glycerin	1	fl. oz.
Oil of lemon...	1	fl. drachm
Alcohol (60-per cent.)	10	fl. oz.

Dissolve the soap, preferably by a gentle heat, in the mixture of alcohol, glycerin, and essential oil; add tho iodido of potassium, and shake until dissolved. Decant or filter, if necessary, after standing a few hours.

Discussion.

Mr. Edmund White regarded the gelatinous condition of the B.P. liniment to be due to salting out of the soap by the potassium iodide. If that is so, the variation in appearance which is complained of is due to variation in the soaps used, these variations being of a character that the B.P. tests cannot discover because they do not go far enough. There might be an official test for the nature of the fatty acids in the soap, so that they should always deal in medicinal matters with soaps of definite composition. He suggested that the B.P. soaps should be made direct from the definite fatty acids, and if that were done they would not be troubled with the variations complained of. (Hear, hear.)

Mr. A. W. Gerrard, while agreeing with Mr. White, said that oleic acid from different makers is not the same body, so that the difficulty would still remain if his suggestion were adopted. He had thought this liniment had been put in the Pharmacopœia for the benefit of examiners—(a laugh)—and so as to give a little trouble to examinees. If the result of Mr. Jones's communication was to give them a uniform preparation under all conditions, it would serve a useful purpose. Dr. Symes said Mr. Jones's liniment is not a substitute for the B.P. preparation, as it is liquid and spirituous. One of the advantages of the official liniment is that it is aqueous.

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* *Ber. deutsch. chem. Ges.* *17* (1884), p. 2545; *19* (1886), p. 3218, &c.

Mr. John Lothian confessed that when students asked him what the official liniment should be like, he could not tell them, as it varied with almost every sample of soap used. He could not agree with Mr. White's statement about salting out, as there is no ion in common between sodium stearate and potassium iodide.

Mr. Brodie also spoke briefly and anecdotally.

Mr. John Lawson (Dublin) said that the liquid preparation had been used in Dublin for many years, it being made according to Professor Tichborne's method with oleic acid and soda, and wholesale houses supply it. Mr. Lawson proceeded to speak about the different methods of making the official liniment, and how some produce a gelatinous or frothy product. He asked Mr. Jones if his preparation is as liquid as soap liniment.

Mr. Jones replied that it is.

Mr. Lawson said medical men would prefer a thicker preparation; further, it should be borne in mind that a frothy or creamy preparation does not contain so much potassium iodide, as a liquid preparation, being more dense than the frothy, is stronger and might lead to trouble.

Mr. Naylor said that wholesale houses stock a liquid preparation to meet demands from medical men. That is one reason why it should be officially recognised.

Mr. H. E. Boorne endorsed this, suggesting that it might first go in the next edition of the "Formulary." (Hear, hear.) But it could not replace the old creamy preparation which is still in good demand.

Mr. Alcock said the very original prescription for the liniment was given to Mr. Nathaniel Smith by a lady, who used the preparation for housemaid's knee and another part of the anatomy of coachmen. (Laughter.) It was alcoholic, and it was the frequent demand for it by persons outside the drawing-room that caused the lady to ask Mr. Smith to make a cheaper one, which was done by leaving out the spirit.

Mr. Kirkby said a liquid preparation would be preferred, if it ensured a product uniform in appearance and composition. Much of the variation at present is due to each man having his own method—in fact, it is generally safe to trust the making of the liniment to one man in the shop.

Mr. MacEwan suggested that all the trouble in this matter arose from the original B.P. authorities not adopting the character and test given by Mr. Smith for the soap to be used—viz., "the white curd soap made by Messrs. Gibbs, of the City Soapworks, or Benbow's curd soap." (Laughter.)

Mr. John C. Umney confirmed Mr. White's observation as to lack of uniformity in the soap employed. He found that a soap (sapo durus) containing 53 per cent. of fatty acids never gives trouble.

Mr. Clague having spoken facetiously,

Mr. Jones replied briefly, stating in the course of his remarks that the alcoholic liniment has given satisfaction.

The President, in thanking the author, said the paper and discussion showed the necessity for having some supplement to the Pharmacopœia. (Hear, hear.) He then called for the next paper.

Distribution of Fats and Strychnine in Nux Vomica Seeds.

By H. Wippell Gadd, F.C.S., and Sydney C. Gadd.

The authors referred to the trouble which arises from the fat of nux vomica getting into the liquid extract. No economical process for removing it on the manufacturing scale has been devised. Recently, when grinding a lot of the seeds (A) in a Carter disintegrator, they noticed that the centrifugal force of the machine separated the hairs of the seed-coat from the heavier particles, and they examined the hairs, which amounted to 5 per cent. of the whole. They found 7 per cent. of fat and 0.5 per cent. of strychnine in the hairs, and only 2 per cent. of fat, but 1.5 per cent. of strychnine, in the remainder of the seed. Obviously rejection of the hairs would reduce the fat by at least 0.5 per cent., without appreciably lowering the strychnine-value of the drug. The authors then made liquid extract from the hair-free drug on the manufacturing scale, and found that 70-per-cent. alcohol removed the whole of the strychnine from the drug and only one-third of the fat. The finished product contained 1.5 per cent. of strychnine and 0.62 per cent. of fat; it was an excellent preparation. Other experiments were made on the small scale and with another sample of seeds (B). In the first the effect of skinning the seeds was tried, when it was found that the hairs and skin amounted to about 14 per cent. of the weight of the seeds. Examined for fat and strychnine the following results were obtained :

——	Fat	Strychnine
	Per Cent.	Per Cent.
Decorticated seeds	3·5	1·5
Hairs and skins	1·5	0·9
Whole seeds (by calculation)	3·25	1·4

Liquid extract made from each of the samples gave the following results (percolation was not, as in the manufacturing scale, carried to exhaustion) :

> Liquid extract from whole seeds, No. 20 powder, contained fat 0.64 per cent. and strychnine 0.95 per cent.; therefore, the amount of 70-per-cent. alcohol required to extract two-thirds of the strychnine removed one-fourth of the fat.
>
> Liquid extract from decorticated seeds, No. 20 powder, contained fat 0.67 per cent. and strychnine 1 per cent.; therefore, two-thirds of the strychnine and only one-fifth of the fat were removed.
>
> Liquid extract from skins and hairs contained fat 1 per cent. and strychnine 0.5 per cent.; therefore, five-ninths of the strychnine and two-thirds of the fat were removed.

These results confirm the experiments with the first sample of seeds, but presuming that the hairs contain about as much fat as Sample A, the skins must contain very little, if any, and therefore there is no advantage in rejecting them.

Further experiments were made on a third sample of seeds (C), which contained fat 4.5 per cent. and strychnine 1.5 per cent. The hairs were carefully scraped off, without removing the skins. The scraped seeds contained fat 4.3 per cent. and strychnine 1.52 per cent., and the hairs, fat 8 per cent. and strychnine 1.0 per cent. Liquid extract prepared from the scraped seeds contained fat 0.8 per cent. and strychnine 1.16 per cent., while that prepared from the hairs contained fat 1.72 per cent. and strychnine 0.33 per cent.

The authors propose to continue the experiments, and hope other workers will contribute such facts and figures as have come to their notice. Meanwhile they conclude :

> First, that the hairs of nux vomica contain proportionately much more fat, and less strychnine, than do the inner portions of the seeds; secondly, that the fat is more readily removed by alcohol (70 per cent.) from the hairs, than from the denser portions of the seed; thirdly, it follows that the hairs can be rejected with advantage before making the liquid extract.

Discussion.

Mr. Alcock said he had first called attention to this matter, and suggested that Mr. Gadd should be careful to see whether the fat in nux vomica is acid or neutral. In the speaker's opinion the difference in the behaviour to alcohol is due to the neutral fat not being easily removed by alcohol.

Mr. Umney said the French process of defatting extracts is preferable in the case of extract of nux vomica. By this method melted paraffin wax is shaken with the warm extract, and on cooling the paraffin wax, with the nux-vomica fat, rises to the surface, and is easily removed.

Mr. Gerrard said his method is to warm the extract and shake with petroleum ether. This removes the fat readily. The process is simple, effective, and economical.

Mr. Alcock : Especially if one uses petrol.

Mr. H. W. Jones said he had used both solid paraffin and petroleum ether and found the solid-paraffin method the simplest. A good amount of paraffin is necessary, so as to get a good substantial cake that can be easily lifted off.

Mr. White asked how Mr. Gadd proposed to get rid of the hairs. (Laughter.) In a disintegrator the hairs come off completely, leaving the seeds napless. It would be necessary either to buy seeds without hairs or rotate in a disintegrator—although the latter involved some risk to the disintegrater.

Mr. Brewis added some words as to the excellent work Mr. Gadd had done on defatting tinctures.

Mr. Ransom was interested to know that there is more fat in the hairs than in the seeds, but he questioned whether it was worth while to remove the hairs when the fat can be removed so readily.

Mr. Gadd, in replying, asked why the drug should not be purified. In his opinion to purify the extract was beginning at the wrong end. He did not understand the difficulty experienced in getting the hair off—in his case the difficulty was to keep the hair on. (Laughter.) His laboratory-man appealed to him as to what to do with a heap of hairs that had been separated from nux-vomica seeds in the disintegrator. On examining these hairs it was found that they contained the bulk of the fat, and hence they were rejected.

Mr. White then gave a *résumé* of the following paper :

Compressed Tablets.

By Henry Rodwell, Pharmaceutical Chemist.

This communication is supplementary to one read by Mr. E. White last year, in which an aqueous emulsion and an ether-alcohol solution of theobroma were recommended as excipients for tablets, cane sugar being recommended as the diluting material. [We give the formulæ in our editorial note.]

Granulation.—The ease with which any material can be worked into tablets depends, as a rule, upon the degree of success attained in granulation. The cohesiveness of a tablet depends in some measure upon the interlocking of the granules on compression ; but chiefly upon the inherent cohesiveness of the material, which may be increased by the addition of sugar, glucose, or acacia. Sugar should be employed wherever possible, but its use is limited. When, say, 5 grains of medicament is phenacetin, aspirin, or quinine sulphate, the addition of sugar in sufficient quantity is not possible without producing too large a tablet. Glucose used to the extent of 8 per cent. completely replaces the sugar, so that 5 grains of medicament can be presented in a 6-grain tablet. The following formula is typical :

Phenacetin	64 parts
Starch	4 parts
Glucose	6 parts
Theobroma emulsion	13 parts

The glucose may be incorporated by first mixing it with the emulsion in a mortar.

Good granules should show no tendency to break down into powder under manipulation. When not so stable as this, gum acacia should be added in the proportion of from 5 to 10 per cent. The following formula is improved in this way :

Reduced iron	16 parts
Gum acacia	2 parts
Starch	1 part
Sugar	4 parts
Theobroma emulsion	2 parts

The addition of gum acacia to the formula for Hutchinson's pills given in the previous paper is an improvement ; it is also necessary for iron tablets and other cases where a dehydrated salt interferes considerably with the operation of granulation.

In using the ether-alcohol theobroma two modifications are recommended for use on occasion : (1) Substitution of a weaker alcohol when granulation produced with the stronger alcohol is imperfect. The modification is employed in the following formula :

Opium	16 parts
Sugar	7 parts
Ether-theobroma	3 fluid parts
Alcohol, 60-per-cent.	2 fluid parts

This modification can be adopted in cases when, from the nature of the material, the use of the aqueous emulsion is contra-indicated ; since granules prepared with the ether-alcohol excipient can be more quickly dried, a saving of time in this way is possible. (2) The use of a volume of 90-per-cent. alcohol equal to that of the ether-theobroma frequently necessitates the addition of a considerable proportion of sugar, which can be reduced if the proportion of alcohol is reduced. The following is an extreme example :

Cascara extract	16 parts
Ether-theobroma	3 fluid parts
Alcohol, 90-per-cent.	0.5 fluid part

In the formula given in the previous paper 50 per cent. of sugar was necessary in order to avoid over-granulation. In such cases as the above a little starch can be added with advantage.

Drying the Granules.—If this is done in a fairly warm and dry room application of heat is seldom necessary, and in no case need the material be heated above 45° C. There is a danger, with some substances, of over-drying, thereby reducing cohesiveness. The weight of the granules depends considerably on the temperature at which drying is conducted, especially if starch or a crystalline substance, such as lead acetate, is an ingredient. Two samples of ordinary starch powder heated in a water-oven were found, in each case, to lose 10 per cent. of their weight ; a similar loss resulted at a temperature of 45° C. To ensure accurate dosage it is necessary, in all cases, to weigh the finished granules, adjusting the weight of the tablets accordingly.

Disintegration.—To bring about the rapid disintegration of tablets which are composed largely of insoluble substances, 5 per cent. of starch powder should be added, and be applied either by dusting over the dry granules, or, better, by adding it to the material before granulation. In the latter case more excipient is required, and improves the finish of the tablets. The following formula for grey powder is an improvement on that given previously :

Grey powder	16 parts
Starch	4 parts
Sugar	20 parts
Theobroma emulsion	4 parts

Compression.—In adjusting the degree of pressure due regard must be paid to disintegration. Increase of pressure adds to the good appearance of the tablets, improving the polish of the surface, and, when the tablets are coloured, making them darker, and apparently more homogeneous in composition, but with a corresponding increase in the time taken to disintegrate. Sometimes tablets crack after compression. This is mostly due to imperfect granulation, but may be caused by the presence of coarse particles, especially crystals, in the material. Avoid this also in the case of coloured tablets, if a homogeneous appearance is desired. Adhesion of the material to the punches during compression results from lack of cohesiveness in the material. Several methods of correcting this have been suggested, such as the addition of talc to the dry granules, and spraying them with an ethereal solution of liquid paraffin, these substances serving as lubricants. The general use of talc as a lubricant is not recommended, as it increases the liability to cracking. If granules prepared with theobroma are found to require additional lubricant, 0.5 per cent. of talc is usually sufficient. When talc is added to correct adhesion as much as 2 per cent. may be necessary ; this proportion should not be exceeded. Talc is most economically applied by spreading the granules in a thin layer on paper and sifting the talc over the surface, using a very fine sieve ; then mixing roughly by lifting the corners of the paper, and completing by rotating in a large flask or bottle. In case of adhesion the punches should be washed with water, the lower punch being first removed for the purpose. If the punches are not kept well polished, the difficulty frequently arises from that cause ; when not in use they should be immersed in liquid paraffin.

As the result of experimenting on iron tablets, the following formula has been adopted as a substitute for pilula ferri, B.P. :

(*a*) Dried ferrous sulphate	150 parts
Gum acacia	25 parts
Sugar	125 parts
Theobroma emulsion (acacia)	60 parts

Granulate and dry thoroughly by the application of heat.

(*b*) Sodium bicarbonate	150 parts
Theobroma emulsion (acacia)	35 parts

Granulate and dry thoroughly with heat and mix two parts of (*a*) with one part of (*b*). Each 5-grain tablet yields on moistening 1 grain of ferrous carbonate.

Theobroma emulsion prepared with gum acacia is preferable in this case to one prepared with soap; the above calculations are based on one giving a 40-per-cent. residue on drying. Absolute drying of the granules is necessary, otherwise the reaction between the salts takes place to some extent and oxidation ensues. Tablets made from the above formula have been exposed for three months to the trying atmosphere of the general laboratory without any further change than a slight colouration of the edges; some of the same batch were coated and have kept perfectly. It is necessary to examine carefully the dried ferrous sulphate, as many commercial samples do not comply with the official requirements.

Discussion.

Mr. White asked for suggestions as to the improvement of the formula for the ferrous tablet.

Mr. H. W. Jones spoke of the method of adding starch to disintegrate tablets. When such a tablet is placed in water the starch granules act as wedges and break open the tablet. The affinity of starch for water is taken advantage of for removing water from essential oils for examination in the polariscope.

Mr. Naylor said that after Mr. Rodwell's paper at the last Conference he (the speaker) purchased a number of so-called disintegrating tablets, and found that some of them did not alter when placed in water for from forty-eight hours to three days. The formulæ in the paper were very useful, as many of the published formulæ are rubbish. (Applause.)

The President accorded the cordial thanks of the Conference to the author, and called upon Mr. Peck to submit the following communication :

A Correction-scale for the Dimmoc Branson Uric-acid Process.

By F. W. Branson, F.I.C.

The divisions on this scale are intended for a gas volumeter graduated to a twentieth part of a cubic centimetre, which renders the apparatus very suitable for the determination of uric acid, urea, and strength of hydrogen peroxide, &c. The graduations for uric acid are the result of a number of experiments with bulked normal urines, a mean content of 0.006 per cent. of uric acid being assumed. Check-determinations with duplicate samples (the mean of two experiments), as carried out by the Clinical Research Association, gave 0.065 per cent. of uric acid. Gerrard's scale for non-diabetic urine was used as a basis for calculating the graduations for urea.

To Correct a Reading for Pressure and Temperature.

Read on the scale to right the observed number of cubic centimetres.

1. Follow the horizontal line along to point of intersection of the vertical headed by the observed barometric pressure, reading between the lines where necessary.
2. From this point of intersection follow the oblique line to the right or left to the point where it intersects the vertical of 760 mm.
3. Follow the horizontal line to the point of intersection with vertical of observed temperature.
4. Continue again along the oblique line to the left to the vertical number 0° C. The reading of cubic centimetres taken at this point is the volume of gas corrected to normal pressure and temperature.

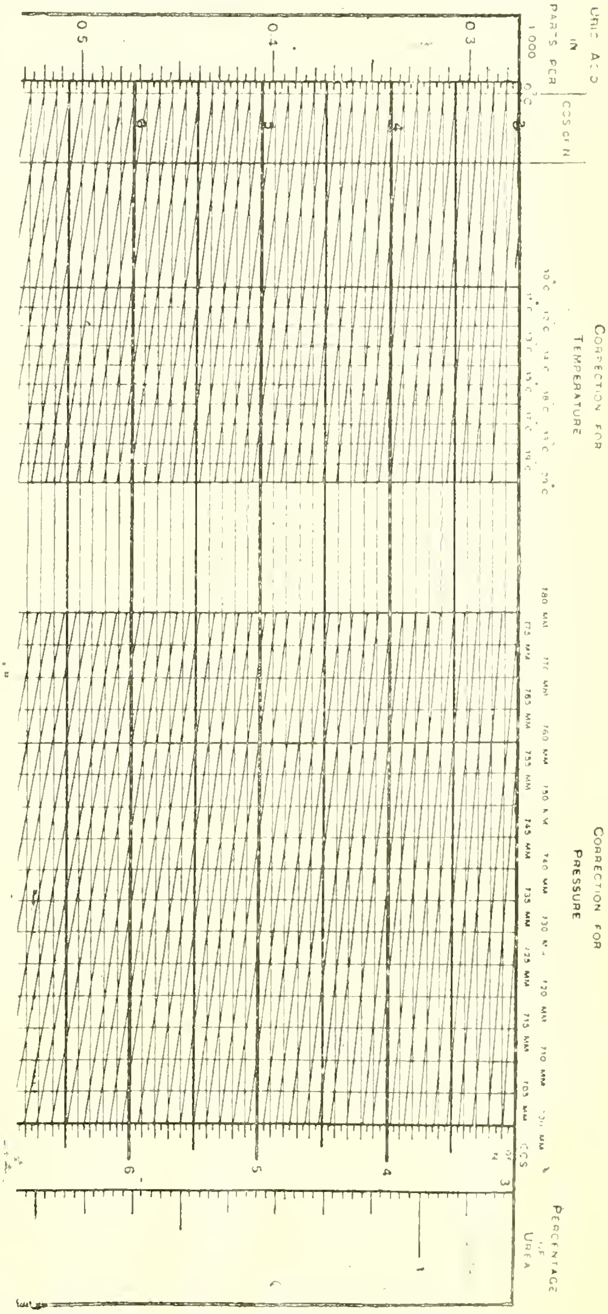
Note by the Editor.—Mr. Branson's scale is too large for our page, and reduction would spoil it. We therefore reproduce (next column) a part from the top. The complete scale is supplied, with the volumeter directions, by Messrs. Reynolds & Branson (Limited), Leeds.

Mr. Peck also communicated the following :

Chemical Examination of Gymnema-leaves.

By Frederick B. Power, Ph.D. (Director of the Wellcome Chemical Research Laboratories), and Frank Tutin.

Gymnema sylvestre, Br., from which the leaves under consideration are obtained, is a shrubby, climbing plant, belonging to the family of *Asclepiadaceæ*, and indigenous to Banda and the Deccan Peninsula (compare "Pharmacographia Indica," Vol. II., page 450). Although various medicinal properties have been attributed to this plant by the Hindus, it was brought more prominently to notice several years ago in consequence of the observation that the leaves, when chewed, have the property of rendering imperceptible the sweet taste of sugar and other saccharine substances, and also, but in a less marked degree, the taste of many bitter substances. The leaves appear to have been first chemically examined by Hooper in 1887, who obtained from them (1) an ether extract, containing chlorophyll and resins; (2) an alcoholic extract, containing gymnemic acid, tartaric acid, glucose, a neutral bitter principle, resin, &c.; and (3) an aqueous extract, containing gum, glucose, carbohydrate, and extractive. The peculiar properties of the leaves were attributed to "gymnemic acid," which was stated to exist in them as a potassium salt. The characters of the substance were fully described in the "Chemical News," 1889, 59, 159, as a brittle, black, resinous substance, of a greenish



colour when reduced to powder, insoluble in water, but soluble in alcohol, ether, benzol, and chloroform. It forms insoluble salts with alkaloids, and this accounts for its masking the taste of quinine and other bitter substances. From analyses of the acid, the formula $C_{32}H_{55}O_{12}$ may be deduced.

The action of the leaves of *Gymnema sylvestre* on the sense of taste was investigated several years ago by L. E. Shore, of Cambridge, whose results are recorded in a paper entitled, "A Contribution to our Knowledge of Taste Sensations" ("The Journal of Physiology," 1892, 13, 191-217). From a large number of experiments in this direction the following conclusions were drawn :

> It is accepted that tastes may be divided into four classes—namely, sweet, bitter, acid, and salt—and as examples of these, glycerin, quinine, sulphate, sulphuric acid, and sodium chloride were employed. By the action of gymnema the sweet taste is very readily prevented in all regions of the tongue. The bitter taste is easily prevented, but not so readily as the former, especially at the back of the tongue. Acid taste, in dilute solutions, is not affected at all. Salt taste is very slightly, if at all influenced. It therefore possesses a marked differentiating action. Solid saccharin, placed on the tongue, is tasteless after the action of gymnema; with a solution of quinine sulphate (1: 1,000) a slight acid taste is noticed at the tip of the tongue. The taste excited by the action of Socotrine aloes is a pure bitter. Very dilute solutions of picric acid are intensely bitter at the back of the tongue, but after the action of gymnema even a saturated solution excites no sensation. The taste of a very large number of substances used in ordinary life is but little affected by gymnema, only such bitter and sweet components as are present being removed. It does not seem to have so ready or so powerful an action on bitter as on sweet taste; the reverse seems to be the case with cocaine. The action of gymnema on tactile perception, such as induction shocks, is very slight. It has no action on pain. The prick of a needle excites the same sensations.
>
> The action of gymnema is therefore believed to be best explained by supposing that the nerve-fibres or nerve-endings capable of being stimulated by pure sweet and bitter substances are different from those which are excited only by acid and salt. The selective action of cocaine, not only on the nerve-endings concerned with taste, but on others associated with more general sensory impressions, points also to the multiplicity of the kinds of endings of sensory nerves in the tongue. The more powerful action of cocaine on bitter taste than on sweet, and of gymnema on sweet taste than on bitter, may also be an indication that the nerve-fibres or nerve-endings concerned with these tastes are also distinct.

The authors proceeded to describe their own experimental work, which was to determine somewhat more precisely the chemical character of the substance designated as "gymnemic acid." They obtained a large quantity of the leaves, which had been freshly gathered in India, and dried by exposure to the air. Greshoff has noted that the leaves of *Gymnema latifolium*, Wall., contain a large quantity of amorphous amygdalin, but no hydrolysing enzyme, but on contact with emulsin hydrocyanic acid and benzaldehyde were obtained.

The leaves of *G. sylvestre* were tested for a cyanogenetic compound, but neither by contact with water nor by the action of dilute acids or emulsin was hydrocyanic acid developed.

For the purpose of a complete examination of the constituents of the leaves, a large quantity of them was extracted by continuous percolation with hot alcohol. After removing the greater part of the alcohol by distillation, a quantity of water was added to the concentrated extract, and the mixture heated on a water-bath in order to eliminate the remainder of the alcohol. A soft, dark-green, resinous mass was thus obtained, amounting to about 5 per cent. of the weight of the leaves. For subsequent reference this substance is designated A.

To the filtrate from the above precipitate dilute sulphuric acid was added in slight excess. This precipitated a quantity of a dark-coloured, resinous substance, which amounted to about 17 per cent. of the weight of the leaves. It was separated from the liquid and washed with hot water until free from mineral acid. In the subsequent description of its properties it is referred to as B.

The acid filtrate from B was shaken with chloroform, which removed only a very small quantity of a resinous substance. It was then made alkaline with barium hydroxide, the precipitate of barium sulphate removed by filtration, and the liquid again shaken with chloroform, when only a little resinous substance was obtained. The alkaline liquid was then neutralised, concentrated, and an excess of basic lead acetate added, which produced a bulky, bright-yellow precipitate. This was collected on a filter, washed with a little water, and then suspended in water and decomposed by hydrogen sulphide. The liquid filtered from the lead sulphide was concentrated under diminished pressure, when a brownish-yellow, amorphous substance was deposited, which was not again readily soluble in water. As it resisted all attempts to obtain it in a crystalline state, it was not further examined. The filtrate from the lead-acetate precipitate was treated with hydrogen sulphide for the removal of the lead, filtered, and concentrated under diminished pressure. The examination of this liquid is referred to as C.

The authors then gave details of their examination of A, B, and C, from which it appeared that they are unable to confirm Hooper's observation that the anti-saccharine principle is soluble in ether, benzene, and chloroform. More critically examining this ethyl-acetate solute, or gymnemic acid, they found that it could not be resolved into one individual active substance; but notwithstanding this fact they consider that the name of "gymnemic acid" may conveniently be retained for it.

The whole results of the work are substantially embodied in the following

Summary and Conclusions.

1. The leaves of *Gymnema sylvestre* contain no cyanogenetic compound, such as has been observed by Greshoff to exist in the leaves of *G. latifolium* ("Ber. d. deutsch. chem. Ges.," 1890, 23, 3548).

2. From an alcoholic extract of the leaves, water precipitates a quantity of soft, dark-coloured, resinous matter, of an acid nature, the chief portion of which is soluble in petroleum. This petroleum extract, after treatment with an alcoholic solution of potassium hydroxide, yielded to ether a substance crystallising in pearly leaflets, melting at 68° C., which was identified as hentriacontane, $C_{31}H_{64}$. It is contained to the extent of about 0.05 per cent. in the leaves. The alkaline liquid, when acidified and distilled, yielded formic acid and a butyric acid.

3. The filtrate from the above precipitate, when acidified with sulphuric acid, yielded a quantity of a dark-coloured resinous product. This would appear to represent the substance described by Hooper, who regarded it as a glucoside, existing in the leaves as a potassium salt. The results of the present investigation have shown that the precipitate is an exceedingly impure and complex mixture of substances, the anti-saccharine element amounting to about 35 per cent. of the original precipitate, or about 6 per cent. of the weight of air-dried leaves. This is soluble in ethyl acetate, and the name of "gymnemic acid" may conveniently be retained as a distinguishing title. It is amorphous, and apparently incapable of yielding any crystalline salt or other simple crystalline derivative. It is undesirable, therefore, to assign a chemical formula to it. It is not a glucoside, but has very weak acidic properties. It has been stated by Hooper that "as gymnemic acid forms insoluble salts with alkaloids, this accounts for its masking the taste of quinine and other bitter substances." It is evident, however, from the physiological tests that have been made with the acid, that its property of affecting the sense of taste is due to its action upon the nerve-fibres or nerve-endings of the tongue, although this is less marked in the case of bitter than of sweet substances.

4. The resinous substance associated with the gymnemic acid in the crude product is also of an acidic nature, but is completely devoid of any anti-saccharine property.

5. A lævorotatory modification of quercitol and an inactive glucose were also obtained.

6. The constituents of the fruits of *Gymnema sylvestre* are similar to those of the leaves, but no quercitol could be obtained from them.

7. Some tests conducted in the Wellcome Physiological Research Laboratories have shown that neither the gymnemic acid nor the resin insoluble in ethyl acetate possesses toxic properties, nor could any pronounced physiological effects be observed when those substances were administered to the lower animals in doses of 0.5 to 1 gram.

Mr. MacEwan said he had seen Dr. Power a few days ago, and he regretted his inability to be present, as he was due in the United States at the time of the Conference, which he wished every success.

The next paper was taken as read.

The Chemical and Physiological Assay of Digitalis Tinctures.

By George Barger, M.A., D.Sc., and W. Vernon Shaw, M.A., M.D.

(A Contribution from the Wellcome Physiological Research Laboratory.)

The authors commenced this lengthy communication by referring to cases in which medicines are assayed chemically or physiologically. Digitalis is an example as to which opinions are still divided. Keller claims to have devised a chemical method for assaying this drug which correctly doses the physiologically active constituents. The authors have had the opportunity of thoroughly testing the process, working on commercial samples of tincture of digitalis.

The densities and percentages of total solids of the nine tinctures were :

Tincture ...	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
Density ...	0·927	0·934	0.928	0·933	0·932	0·930	0·930	0·935	0.926
% solids ...	2·6	4·7	4·1	3·2	3·7	2·7	3·1	4·9	3·6

According to Keller the total solids in carefully prepared digitalis tincture (Swiss Pharmacopœia) ought to be 3.5 to 3.7 per cent. Allowing for the difference in strength, good British tincture ought probably to contain 4.8 to 5.0 per cent. Out of the nine commercial tinctures examined by the authors only two came up to this value, the average being 3.4 per cent.

From each of the tinctures "pure digitoxin Keller" was isolated in the manner described by Keller, and the authors were never able to crystallise it—in fact, they found that two-thirds of it is not digitoxin at all. The following are mean results for all the tinctures :

Crude digitoxin	0·0485 per cent.
"Pure" digitoxin	0·031 per cent.

Many of the estimations were done on 73 grams of tincture, and some on two-thirds of this amount. The weight of the pure digitoxin is generally about two-thirds of the weight of the crude substance.

In the physiological part of the work the toxicity of all the tinctures was first determined, then that of the digitoxin. Frogs (*Rana temporaria*) were used, and their weights were generally between 20 and 35 grams, but comparative experiments were limited to frogs of nearly the same weight. Males were used almost exclusively, and the time of the year was early summer. The tinctures were tested by evaporating a known weight on the water-bath and suspending the residue in a definite volume of hot water. The digitoxin "Keller" or digitoxin "Merck" was dissolved in the least possible quantity of absolute alcohol, and this was diluted with distilled water.

The following shows the results :

Tincture of Digitalis.

Sample I. contained 0·033 *per cent. "pure" digitoxin.*

Dose		Weight of Frog		Result
0·5 c.c.	...	25 grams	...	120 minutes
0·5 ,,	...	24 ,,	...	80 ,,
0·4 ,,	...	23 ,,	...	100 ,,
0·4 ,,	...	22 ,,	...	80 ,,
0·4 ,,	...	22 ,,	...	80 ,,
0·3 ,,	...	22 ,,	...	lives
0·25 ,,	...	22 ,,	...	,,
0·25 ,,	...	21 ,,	...	,,

Hence mean lethal dose = 0·4 c.c. Tincture I. (for 22-gram frog).

Each of the other samples was similarly examined. We summarise the results in the subjoined table :

Sample	No. of Expts.	Per cent. Pure Digitoxin	Mean Lethal Dose and Frog's Weight
II.	16	0·038	0·35 c.c. per 32 grams
III.	11	0·028	0·45 ,, 24 ,,
IV.	6	0·024	0·35 ,, 23 ,,
V.	10	0·021	0·35 ,, 27 ,,
VI.	4	0·037	0·4 ,, 24 ,,
VII.	6	0·028	0·5 ,, 29 ,,
VIII.	4	0 038	0·25 ,, 22 ,,
IX.	5	0·033	0·33 ,, 22 ,,

Approximately the toxicity of the strongest tincture was about 1½ times that of the weakest. The authors next determined the toxicity of pure digitoxin as obtained by Keller's method, and found the mean lethal dose to be 0.475 milligrams. The mean lethal dose for *Merck's crystallised* digitoxin and for Nativelle's *Digitaline crystallisée* is 0.3 milligram. Merck's crystallised digitoxin (prepared according to Kiliani's method) is thus about 1½ times as active as Keller's purified digitoxin.

For the sake of completeness the M.L.D. of Merck's digitalin, Gehe's digitalin, and Merck's digitaleïn, were also determined. The results were as follows for 25-gram frogs :

Digitalin "Merck"	M.L.D.	1·25 milligram
,, "Gehe"	,,	2 ,,
Digitaleïn "Merck"	,,	1·5 ,,

With all these water-soluble preparations the heart stopped in diastole. It will be seen that digitalin and digitaleïn are much less toxic than digitoxin. Hence it has been supposed that the amount of digitoxin present in a tincture gives an indication of its toxicity. This is not so, and the fact was proved by further physiological experiments, which showed that only about half the toxicity of the tincture is due to digitoxin, so that Keller's method of assay is of little value.

The authors then prepared an artificial tincture (that is, one from chaff, adding digitoxin) and by analysis proved that Keller's process does not isolate all the digitoxin, or, rather, it remains with the resin separated by filtration in one stage of the assay-process. They therefore conclude that the amount of digitoxin found by Keller's method in tincture of digitalis is less than half the amount actually present, and that the only reliable method of assaying the tincture is the physiological one.

Discussion.

Mr. Maben said that there was one aspect of the case that the authors had not specifically referred to in their exceedingly interesting paper. It was well known that commercial samples of digitalin and digitoxin varied in physiological activity to a marked degree, the variation being sometimes as great as 1 is to 4; and not only so, different samples of digitalin from the same maker also varied. Then, again, the digitalin of Nativelle was said to be digitoxin, and Homolle's preparation was also said to be digitoxin or a mixture of glucosides. The fact was that the activity of these substances had no necessary relationship to their name, and the authors' statement that "as yet the only reliable assay method of digitalis tincture is the physiological one," applies equally to the so-called active principles of the drug as found in commerce.

At this stage the Conference adjourned for luncheon.

Fourth Session, Wednesday Afternoon, August 10.

On resuming at 2.5 p.m., when about a dozen members were present, the President called for a paper on

Cultivation of Valerian-rhizome in Derbyshire.

By F. A. Upsher Smith, Ph.Ch.

From conversations with old inhabitants of Chesterfield, the author learnt that about fifty years ago valerian, elecampane, pansies, and other herbs were grown in that district. The father of the two senior partners of Robinson & Sons (Limited), of Chesterfield, himself a retail chemist, formerly grew considerable quantities of these herbs, and manufactured from them extracts and other galenical preparations, including syrup of violets. The fields are now built upon, and at the present day only one drug is grown in Derbyshire in any quantity—viz., valerian-rhizome—though small quantities of elecampane are occasionally produced. "Pharmacographia" mentions that valerian was cultivated at Ashover, Woolley Moor, Morton, Stretton, Higham, Sherland, Pilsley, North and South Wingfield, and Brackenfield, all parishes in Derbyshire, yielding together in 1872 about 6 tons of drug. At present there are fewer cultivators and the yield is less. The author has had the opportunity of frequently visiting the farm of Skagy Leg, in the parish of Brackenfield, some 2½ miles from Stretton (Midland) Station, and near the river Amber, where for generations valerian was produced in fair quantity and is still grown by Mr. Morley. The following notes are the result of these visits :

The Wild Plants are Collected in the spring. It is found that the plants thrive best when collected wild and transplanted to another soil. Propagation from seeds is not practised. Valerian grows wild in many parts of Derbyshire, but every year the farmers find it necessary to go further afield. The author thought the slow growth of the plant, and the necessity for the land to be unproductive for at least one year in growing from seeds, accounts largely for the wasteful method of annually collecting wild plants. In Darley Dale this year the plants grew in abundance in woods near the Mill Close Mine, near Wensley, between Darley and Winster. The country is on the limestone, and the plants are found in woods which are both hilly and marshy. Owing to the dense underscrub collection is arduous and risky, because the shafts of disused mines are met with here and there, sometimes only loosely planked over. The time of collection depends largely upon the weather. In an early spring young plants begin to appear in March. Valerian is a perennial plant, consisting of an erect rhizome from which runners are given off. These runners are slender, and at the end there develop in the usual way young daughter plants. The parent plant flowers year after year, but the daughter plants do not flower the first year or two ; they produce, however, a luxuriant supply of leaves, and in the autumn their rhizomes are of good quality. In collecting the farmer gives preference to the daughter plants and to the younger flowering plants.

Planting.—Having previously dug over the land and treated it with good manure, the farmer proceeds to set the young plants. This is usually done by hand, as ploughing-in does not give so good results. The soil at Skagy Lag Farm is a light clay, being on the lower coal measures. The plants need a lot of water. Last year it was too wet, and this year it has been much too dry for them. It is advantageous to supply from time to time artificial manure and plenty of liquid manure. Weeding also occupies a great deal of attention.

Topping.—The plants collected are the older and daughter plants already mentioned. It is necessary to cut the flowering-stems off the plants as they appear, leaving only the lower leaves. In this way the whole of the plant's strength will be found in the rhizome in the autumn. The flowering-stems appear about one month after the plants are set, and if allowed to remain produce flowers during June, July, and even in August. It is not unusual to see plants here and there, whose tops have not been removed, attaining a height of 5 to 6 feet, and in the case of these older plants the base of the flowering-stem may measure from 1 to 1½ inch in diameter.

Digging Up.—About September, or early in October, the whole of the tops remaining above ground are cut off with a scythe and the rhizomes dug up. Were it not for the autumn rains it would be better to leave the plants in the soil until Christmas, as the roots increase in size, but the clinging nature of the damp soil late in the year renders it too troublesome an operation to clean the rhizomes. The rhizomes are taken to a shed, and the larger ones stood longitudinally to facilitate washing the "hearts."

Washing is conducted in an expeditious manner in the river Amber. A stout plank is placed across the stream, and a large wooden box is secured to one side of it by means of two strong stakes driven into the bed of the stream. The box (2 to 2½ feet deep) is perforated with holes and partially filled with the rhizomes. The water flows through the box and washes away the earth that adheres to the roots, a rake being used to keep the latter in motion.

Drying.—The wet rhizomes are dried in a shed floored about 6 feet from the ground, the flooring being well perforated, on which the rhizomes are strewn. Beneath is a large coke fire, whose heat does the drying. The rhizomes so prepared are ready for market. The drying operations continue from March to December. This year the continued drought has dwarfed the plants somewhat, so that there is not the usual quantity of foliage. As a result it is expected that the rhizomes this year will be smaller than usual. The finished product is carted to Messrs. Greaves & Son, Chesterfield, who distribute it to various parts of the world. In spite of the fact that considerable quantities of valerian are grown in the United States the bulk of the Derbyshire yield goes thither.

Uses.—The value of valerian as a nervine stimulant and antispasmodic is well known, but the author has heard locally of several cases in which the chewing of the rhizome has caused loose teeth to set again.

Mr. Upsher Smith then referred to the fact that for some years Japanese valerian has been offered in this country. It is the root of *Valeriana latifolia*. Mr. Ransom gave him a sample, which he found to be bolder in size than the home-grown drug and darker in colour. In odour the Japanese is more camphoraceous, but in taste it is less aromatic and more acrid than the Derbyshire drug, leaving a distinctly bitter taste in the throat, while the Derbyshire rhizome is free from the bitter taste. Finally he stated that Dr. Drabble and he are investigating the botanical source of Derbyshire valerian, and so far the balance of evidence is in favour of *Valeriana Mikauii*, Syme.

Discussion.

Mr. Martin pointed out that the paper was entirely of pharmaceutical interest. In the presence of radium and other physical constants it is useful to know that drugs that have served a good purpose for hundreds of years are not forgotten.

Mr. Cross said *Valeriana sambucifolia* is pretty abundant throughout the country, and the soil in that part of the country is particularly favourable for its growth.

The following paper was then read :

Desiderata in a Future Pharmacopœia.

By F. C. J. Bird.

Having referred to Professor Remington's recent statement regarding the United States Pharmacopœia and the letter from the Chairman of the British Pharmacopœia Committee to the Pharmaceutical Societies, the author explained that the purpose of his remarks in this note was to elicit discussion and especially to obtain help from pharmacists, so that the next edition of the B.P. may be second to none among the Pharmacopœias of the world.

One of the greatest faults of the 1898 B.P. is the absence in many cases of definite limits of impurity in medicinal substances, especially chemical salts. The expression "only the slightest reaction" particularly has proved a source of trouble, as this depends much on the manner in which the test is carried out. Say that a sample of an ordinary chemical salt is in question. It has happened that the purchaser, working with a considerable quantity and obtaining what he considers a copious precipitate, has rejected the sample on the ground that it did not pass the test of the Pharmacopœia. The manufacturer, with a small quantity of substance tested in dilute solution, has maintained that only the slightest reaction for a certain impurity is afforded, and that the substance did pass the tests of the Pharmacopœia. The complete removal of impurities, harmless from a medicinal point of view, may be difficult and costly, and there may be no corresponding increase in the medicinal value, but the amount of innocuous impurity permissible should be properly defined. Limits may be fixed, as in the U.S.P., by directing that the reagent be added either to a stated weight of the substance previously dissolved in a given volume of water, or to a solution of a given strength. A test so expressed would not admit of dual interpretation. Perhaps it might be preferable to give a general direction that all qualitative testing be carried out in a 10-per-cent. solution of the chemical salt under examination, except in the cases in which the substance was not soluble to that extent, when the strength of the solution to be tested would be specified. It would also be a great advantage if a statement were made of the percentage of pure substance required as the standard of medicinal purity for each B.P. chemical. Declaration of percentage of the pure substance and limit of innocuous impurity will be one of the features of the new U.S.P.

Frequent difficulties have arisen, involving much correspondence and difference of opinion, during the last few years, respecting the presence in B.P. chemicals of impurities of a harmful nature, such as lead, arsenic, etc., and it is most important that exact limits be stated for such impurities, and, in addition, that more detailed instructions be given for applying tests. Under Borax, for example, occurs the statement that it should yield no characteristic reaction with the tests for arsenic, but it is quite easy, with the delicate modifications of the B.P. tests now available, to obtain a very characteristic reaction for arsenic with nearly all samples of borax. The principle of limiting dangerous impurities, rather than requiring their complete absence, may be extended to all B.P. chemicals.

The vexed question of the status of the Pharmacopœia as a work of reference or standard under the Sale of Food and Drugs Acts should certainly receive consideration. Legally perhaps the B.P. is not a standard in a court of law, and probably its compilers never intended it to be one, but in such courts it has been accepted and recognised as a standard authority on substance mentioned therein. It seems desirable, therefore, that in the compilation of the monographs, this fact should be kept in view, especially if the introduction of figures bearing on the specific gravity, extractive, etc., of galenical preparations be contemplated. It is very necessary that all figures should be exhaustively confirmed, and the processes concerned rendered perfect, before the final adoption of standard figures in the characters and tests of drugs or preparations. Reasonable allowance should also be made for alteration in the composition and physical characters of the latter during manufacture and storage.

When a B.P. monograph refers to an article used both in medicine and for other purposes—*e.g.*, beeswax, ammonium carbonate, etc.—fresh difficulties arise, and, in the past, a good deal of trouble has been caused by the British Pharmacopœia being regarded as a standard for commercial articles. The author quoted Mr. Johnstone's recent remarks on ammonium carbonate (*C. & D.* Summer Issue) as proof that the same standard is not necessarily suitable for both medicinal and commercial substances. A clear statement in the preface that the descriptions used in the text of the Pharmacopœia were intended to apply to medicinal substances only, and not necessarily to substances known by the same name but required for other purposes, together with a free use by the pharmacist of the word "medicinal" as distinguished from all other varieties, would do much to clear away this difficulty and prevent vexatious interference with the chemist in the conduct of his business.

The author next referred to several of the B.P. assay-processes which require further investigation—for example, opium, belladonna, etc., whose processes give results below the truth, while statements are made in the B.P. that the several preparations should contain a certain percentage of alkaloid. In standardising a galenical preparation it becomes a question as to which should be taken, the stated strength of the preparation in alkaloid, as shown by another and more accurate method of assay, or the percentage-strength given by the official process. The author thought for uniformity the official process should always be adopted even if incorrect, but others hold a contrary opinion.

It would be interesting, he concluded, to know to what extent metric weights and measures in the B.P. formulas have been found advantageous. They are certainly useful in showing at a glance the percentage of ingredients, and when working on a large scale with quantities in hundreds of pounds, but it will probably be a long time before the metric quantities given in the B.P. formulas will replace the imperial weights and measures in the everyday work of the laboratory. It seems probable that both sets of figures will have to be retained in the next Pharmacopœia.

Mr. J. C. Umney then gave the gist of a communication on

Irish Poor-law Medicines.

By J. E. Brunker, M.A.

This was a "report upon the results of examination of pharmaceutical preparations by the analysts of the Poor-law unions of Ireland for two years, ended March 31, 1904." These dealt with the average percentages of extractive and alcohol in tinctures, liquid extracts, and liquors, obtained by eliminating the comparatively small number of samples which appeared to be abnormal. The figures were substantially a combination of the tables for 1902-3 and 1903-4 which have already been published in the *C. & D.* As regards the percentage of extractive, it must be admitted, said Mr. Brunker, that it gives little or no information as to the therapeutic value of certain of the drugs to be found in the tables. This applies to preparations of such drugs as jaborandi, gelsemium, hyoscyamus, etc., for which no standard can or ought to be adopted. Until such standards have become official we can only deal with such facts as are at our disposal.

Discussion.

Mr. Umney said too much stress could not be laid on the necessity for framing reasonable standards of purity in the subsequent editions of the Pharmacopœia. The limits should be properly set out, and preferably at the top of the monographs. Mr. Brunker's figures were very useful, as they were actual results obtained, and not inferred standards. The danger of such standards is well shown by the attempts made to fix certain impracticable standards for vinegar of squill and compound tincture of benzoin.

Mr. Tyrer said Mr. Umney's remarks accurately stated the case in the interests of all. The minimum amount of therapeutic impurity should be definitely stated, and the margin should not consist of deleterious impurities. The standard should be within due limits as to cost, remembering that the cheapest thing is not always the cheapest. As a broad principle it is best to buy the purest products to begin with, as the residuals and mother-liquids resulting from purification-processes often involve a loss. Let there be analytical control from the top to the bottom of the manufactury, a test-tube and pure reagents being a *sine quâ non* to the chemist in his business. Incidentally Mr. Tyrer said the word "metrical" applied to weights and measures is less applicable than "decimal." It is a decimal system that is wanted to give the necessary ease of calculation.

Mr. Glyn-Jones said one of the chief difficulties which required emphasising was the need of bringing together the work of those who prepared the Pharmacopœia and those who administer the Sale of Food and Drugs Acts. Some steps should be taken to embody some of the statements of the past Editor in the preface of the new volume and useful results would follow. It is claimed by the compilers that they did not intend that the Pharmacopœia should be a standard in a court of law. They certainly did not claim the Pharmacopœia to be a standard in the preface, but why were synonyms for domestic articles inserted? This is pointed to as evidence that it is clear that standards were intended to be set up for domestic remedies. Mr. Bird was not quite correct in stating that the Pharmacopœia is not a legal standard, as it is made so for compounded articles in Section 15 of the Pharmacy Act. He (the speaker) was sorry that the Council had not done something to administer that section of the Pharmacy Act. The administration would have been safer in the hands of the Pharmaceutical Society than in those of public analysts who have not had the necessary training in the valuation and judging of drugs. A public analyst recently stated that he would condemn potato starch if supplied by a chemist as "starch," but not if obtained from a grocer. He (the speaker) hoped the compilers of the next Pharmacopœia would consider the advisability of placing an asterisk against those articles used for other than medicinal purposes. He hoped in that case that the characters would be definitely stated as only applying to the drug when used in medicine. It is time the compilers of the Pharmacopœia gave up stating that they do not intend the book to be a standard, because lawyers and others in a case of this kind apply the ordinary test of the English language. When the Pharmacopœia says "no reaction" lawyers hold that it means that and nothing else. The language of the monographs should be as concise as possible, and, above all, should express exactly what the compilers mean. Again, analysts are too prone to condemn a drug on one characteristic alone. There is perhaps some excuse for the analyst, as he is wretchedly paid for his work, and it is not possible for a fee of ten shillings to conduct a thorough analysis of a drug. It also occurred to him that the Pharmacopœia authorities might indicate that before any drug is condemned the analyst should consider all the characteristics. He hoped the members of the Conference would keep before them the fact that the

Pharmacopœia has become a legal standard, and press their views for the inclusion of such standards as will have the approval of all those qualified to form an opinion.

Dr. Symes said it might seem absurd for an analyst to condemn a drug obtained from a chemist that he would pass if obtained from a grocer, but that attitude is quite right and consistent with the Pharmacy Act. The clause in that Act dealing with compounding B.P. medicines does not, he said, enable the Pharmaceutical Council to deal with anyone outside pharmacy: it applies only to registered persons. The public should know that they run a risk in purchasing drugs from unqualified persons.

Mr. Naylor said it is desirable in fixing a standard that regard should be paid to the fact that the preparation has to be stored by the chemist and not always under the most advantageous conditions. It should be borne in mind also that a large number of preparations are not supplied direct from the vessel in which they are received from the wholesale house, but are transferred to shop-bottles and subjected in the subsequent storing to extremes of temperature, from winter's frost to summer's heat. In many of the circumstances the standard should not be too rigid. If practical pharmacists had an opportunity of taking part in the preparation of the British Pharmacopœia, this aspect of the case would not be lost sight of.

Mr. Gadd said that while it is useful to have limits fixed to the quantity of a poisonous ingredient, it is not so well to have a minimum of purity fixed. There is, as Dr. Attfield has said, great virtue in the word "about." It is a safeguard that saves a good deal of trouble.

Mr. Martin agreed that there should be more precise physicial conditions laid down in the tests. How many of them used to test for arsenic as rigidly as they do today? To get zinc free from arsenic is almost impossible, and so with many reagents. The word "standardisation" has a peculiar fascination to some people, equal to that exerted by the word "Mesopotamia" on the old lady. What is to be taken as the foundation of a standard—the extractive or the alkaloid?

Mr. Cross pointed out that Dr. Symes's interpretation of the Pharmacy Act, in that only chemists could be prosecuted under Section 15, was not quite in accordance with his views. He (the speaker) held that the Council clearly have the right to prosecute other persons than chemists who do not compound according to the Pharmacopœia.

Mr. Bird replied to the discussion. He agreed with Mr. Tyrer's way of putting the standards question, and his preference for the word "decimal." The suggestion by Mr. Glyn-Jones of the use of asterisks was an excellent one, and went further than he (the speaker) advocated in his paper. He certainly thought that the storing of drugs should be taken into account when fixing standards. The amount of extractive was, he thought, a fair ground for judging a preparation. He also desired to emphasise the decision of the General Medical Council to publish their results in future for criticism. In this way pharmacists would be able to offer the results of experience on the various matters.

The last paper was taken as read, viz.:

Sanseviera Thyrsiflora.

By Frederick Davis.

Sanseviera thyrsiflora is indigenous to South Africa (N.O. *Liliaceæ*), and is largely used in its fresh state as a remedy for piles. Many other species of the same order, such as *S. zeylanica*, are the source of a very strong and tough fibre, known commercially as "bow-string hemp." It was noticed during the African campaign that Boers suffering from hæmorrhoids dug up a portion of the rhizome, freed it from extraneous matter, trimmed off the outer integuments, and, chewing the inner portion, swallowed the extractives, rejecting the fibres, which remained in a tangled mass in the mouth after chewing. Captain Tremlett ascertained that in each case a cure was effected, and sent a quantity of the rhizome to an English physician, who submitted it to the author for investigation.

There is practically no literature about the plant, but Professor Andrew Smith in his "Contributions to the South African Materia Medica" says:

> This plant is to be seen frequently beneath trees and in thickets, with its sword-shaped, leathery leaves, with a border and zigzag white markings. Its root is given by Dr. Pappe as used for piles. The Kaffirs employ a decoction of the rootstock to expel all kinds of worms. An experienced native declares it to be very efficacious.

The plant is known in Africa as "Sikolakota," and by the Kaffirs as "Tsi Kolakota." The author finds that the rhizome contains a glucoside (chiefly in the inner portion of the outer integument and the ground tissue), a globulin, and an albumen (principally in the phlœm of the fibro-vascular bundles). It is therefore necessary to employ the whole rhizome or the entire medical constituents will not be obtained. The fresh rhizome should be employed, because, if partially dried, fermentation sets up, with the consequent decomposition of the active principles, while the entirely dried rhizome is less active medicinally. Moreover, if not dried quickly and at a low temperature, the colour of the rhizome suffers markedly.

The best preparation pharmaceutically, and most active physiologically, has been made by the following method:

> Press out the juice from the fresh rhizome, filter and preserve by the addition of 20 per cent. of glycerin. The addition of ethylic alcohol impairs the physiological action.

The character of the glucoside found somewhat resembles that of glycyrrhizin, and ultimate analysis shows it to be probably identical, viz., $C_{44}H_{63}NO_{18}$. The substance is optically inactive, and several separately obtained samples varied in melting-point between 178° and 200°.

This preliminary statement does not profess to be exhaustive—indeed, indications have already been obtained of the presence of another important constituent.

Concluding Proceedings.

The late Mr. Alfred H. Allen.

Mr. Gerrard said this Conference meeting in Sheffield could not be allowed to pass over without a reference to a sad loss which they had sustained—a loss to Sheffield itself, and to the chemical portion of the community, especially public analysts. He referred to the death of their distinguished brother, Mr. A. H. Allen. In the early days of the Pharmaceutical Conference Mr. Allen had attended the meetings very regularly and had read many useful and valuable papers before it, and he felt sure they would all join with him in this resolution he had to submit, which was as follows:

> That the members of this Conference express their deepest sympathy with the family and relatives of the late Mr. A. H. Allen, and that a letter of condolence expressing our feelings be sent from this Conference to the members of his family.

Mr. Rutherford Hill, in an exceedingly feeling speech, seconded the motion, which was put to the meeting and carried in silence by all present rising in their places.

The late Mr. William Ward, F.C.S.

Mr. Newsholme was entrusted with a similar motion regarding Mr. Wm. Ward, which he put in a speech appreciative of that gentleman's talents. Mr. G. Squire seconded, and the motion was carried in a similar manner to the one preceding.

Presentation from the "Bell and Hills" Fund.

The President said that one of the duties of his office was to make a presentation each year to the local organisation in the town which they visited, and explained the terms under which the money had been given by Thomas Hyde Hills for the purposes of this gift of books selected by the Local Committee.

Mr. Newsholme, in thanking the President, said the Sheffield Society had the books presented twenty-five years ago. They had been of immense value, and he had no doubt those would be also.

Presentation to Mr. F. Ransom.

The President said he would ask them to join with him in the pleasing duty of expressing their regard and esteem for their past Secretary, Mr. Ransom, and asking him to receive at their hands a small token of that regard and esteem. He need not remind Mr. Ransom that he bore an honoured name—not only honoured in pharmacy, but in other spheres. He had brought to them that honoured name when he accepted the Hon. Secretaryship of that Conference, when he had succeeded other men held in honour among them, the first but not the least of whom was Dr. Attfield. How well Mr. Ransom had done that work was known to all of them. His attendance not only at every meeting of the Executive Committee, but at any other committee called in connection with it, had been, he believed, without one default, and it was only those who were honoured by being put in such a position as he (the President) was who could properly realise the amount of work Mr. Ransom had had to do. His presence with them almost every year had been graced by the attendance of Mrs. Ransom—(loud applause)—and he knew she had added very much to the pleasure of their gatherings, and they had every indication to lead them to think that she had been of considerable service to her husband in his work. The President also touched upon the advancement of pharmacy during the period Mr. Ransom had held office, and the high esteem in which he is held by members of the Conference, who desired to place on record their love and regard for him. In the first place he presented him with an album containing many names of those who expressed their regard for him; he had also to present him with a desk, and still more with a gold watch, which, he trusted, would record very many happy minutes, hours, and years, and that its recipient would have all honour in his future career, and prayed that God's richest blessings would be showered on him the whole of his life, and on those who were dear to him.

The close of the President's remarks was followed by long-sustained cheering.

Mr. Martin was then called upon by the President. He said he would have been sorry if this presentation had been made to Mr. Ransom without his having an opportunity to endorse all that had been said by the President, not only with regard to Mr. Ransom, but Mrs. Ransom also.

Mr. Naylor also supported, saying he did not suppose anyone in the room knew so well as he the large amount of self-sacrificing work Mr. Ransom had done for the Conference. He was sure that the Conference had gained immensely by Mr. Ransom's labours, and he assured Mr. Ransom that he had their very best wishes for a long life, for a very happy life, for a very useful life, and that he might have strength granted unto him so that he would be able to continue to contribute, as he had done in the past, to future Conferences. (Applause.)

Mr. R. A. Robinson expressed, on behalf of the members of the Pharmaceutical Society who had watched Mr. Ransom's work, their pleasure in seeing this presentation to him, and congratulated him on the appreciation shown by his fellow-members.

Mr. Ransom, on rising to reply, was received with long-sustained applause. He said he felt words were quite inadequate to express his feelings. On his retirement last year they had thanked him for any work he had done, and he felt that that was sufficient acknowledgment. During the greater part of his official connection he had had the great advantage of being associated with Mr. Naylor, and to him he gave the credit. On Mr. Naylor's retirement he had had the good fortune to secure as his colleague Mr. Peck, who by his ability had already proved his fitness for the position. To these gentlemen and to all the officials of the Conference and members of the Executive he owed a debt of gratitude. Although feeling his unworthiness to accept this testimonial, he assured them that he should value it most highly. He thanked them, and also for the remarks respecting his wife. With reference to the future he thought that the Conference under its present management had the promise of a great success. It was not encumbered by any official restrictions, and opened its doors to all associated directly or indirectly with pharmacy. He thought it deserved and would have a long period of prosperity before it.

Mr. Ransom's closing words were the signal for another hearty expression of the feeling of the meeting.

Brighton in 1905.

Mr. W. H. Gibson (Brighton) was then called upon by the President, and said it afforded him very great pleasure to be there with several of his colleagues to give the meeting a very sincere and hearty invitation that the Conference should visit Brighton next year. He said that the Conference last visited Brighton in 1872, now thirty-two years ago, and he hoped the memory of that visit remained with some of them, but to those who were not yet thirty-two years of age, and to those who had not travelled so far south, he might say that Brighton offered many attractions to the visitor. He proceeded to enumerate some of these, referring particularly to the splendid hotel accommodation at their disposal, and to the Hôtel Métropole, which is to be the headquarters. He gave the invitation on behalf of all the chemists of Brighton and the district.

Mr. W. W. Savage seconded Mr. Gibson's invitation in a good-humoured speech, and was followed by Mr. Yates, who stated, *inter alia*, that any member of the Conference who would write to the Town Clerk of Brighton would get a copy of a guide to the town. Mr. Blamey, another member of the deputation, also spoke.

Mr. W. L. Currie moved that the invitation be accepted. Mr. Cross seconded and Mr. Beggs supported. The motion was carried unanimously.

For 1906 and 1907.

Mr. Gerrard (President of the Midland Pharmaceutical Association) said that there was no doubt the British Pharmaceutical Conference was in splendid marching order, and he was there as one of a deputation sent from the city of Birmingham and the Midland counties to ask the Conference to visit them in the year 1906. He assured the meeting of a very hearty and cordial welcome.

Mr. Harry Kemp, of Manchester, who, with his colleagues from the Manchester Association, were prepared to ask the members of the Conference to look forward to going to Manchester in 1906, said as they were very friendly with the Birmingham people he would not press the matter, but would ask them to bear in mind an invitation for the Conference to visit Manchester in 1907.

Votes of Thanks.

Mr. R. A. Robinson moved the thanks of the Conference to the members of the Local Committee and coupled with the resolution the names of Messrs Newsholme, Squire, and Antcliffe. Mr. Tyrer seconded, and the motion was put and carried amid long and sustained applause. Mr. Newsholme had a very hearty reception on rising to reply. He said thanks were due more to the Hon. Secretary than to anyone else. He had worked, during the whole of the time since they had invited the Conference to visit Sheffield, in a splendid manner; he had worked exceedingly hard, and nothing had been too much for him to do. (Applause.)

Mr. Squire and Mr. A. Russell Fox were also called upon, and replied briefly.

Election of Officers.

At this point a blackboard showing the names of the officers proposed for the ensuing year was placed on the platform, and Mr. Martin formally moved the election of the following, commenting upon the merits of each one new to office:

President: Mr. W. A. H. Naylor.

Vice-Presidents: Mr. R. A. Robinson, Mr. Johnston Montgomery, Mr. D. B. Dott, Mr. W. H. Gibson, Professor Greenish, and Mr. Francis Ransom.

Hon. Treasurer: Mr. John C. Umney.

Hon. Secretaries: Mr. E. Saville Peck, M.A., and Mr. Edmund White, B.Sc.

Hon. Local Secretary: Mr. W. W. Savage. *Hon. Assistant Local Secretary*: Mr. C. G. Yates.

Executive Committee: Mr. H. Antcliffe, Mr. F. C. J. Bird, Mr. H. W. Gadd, Mr. D. Lloyd Howard, Dr. W. H. Martindale, Mr. H. E. Matthews, Mr. J. F. Tocher, Mr. Harold Wilson, and Mr. R. Wright.

Auditors: Mr. J. W. Bowen and Mr. W. Prior Robinson.

Mr. Glyn-Jones seconded, and the motion was carried unanimously.

More Thanks.

Mr. Tocher moved the vote of thanks to Dr. Hicks, Principal of the Sheffield University College, for the use of the lecture-theatre, and Mr. Watson-Will seconded. This having been carried, Mr. Beggs moved a vote of thanks to the Lord Mayor, which Mr. R. Feaver Clarke seconded, and it was carried.

Dr. Symes moved a warm vote of thanks to their excellent President for the able manner in which he had presided over the meeting and conducted the business of the

Conference throughout the year, expressing high appreciation of his services. This was seconded by Mr. J. C. Umney, and was carried with acclamation.

Mr. Idris replied, but urged that the thanks should have been given to the Secretaries and the Treasurer, to whom he moved that the thanks of the Conference be accorded. This was seconded by Mr. Newsholme, and carried.

Mr. Peck acknowledged the vote, and referred to the valuable help given by Mr. White, who also replied briefly, saying amid laughter that the work was not hard at all.

Thus ended the regular proceedings of the 1904 meeting.

Mr. W. A. H. Naylor.

Those who were There.

The following signed the attendance book:

Alcock, F. H., Birmingham
Alcock, Mrs. F. H., Birmingham
Anderson, A. B., Dundee
Anderson, Emma A., Dundee
Antcliffe, H., Sheffield
Antcliffe, Mrs., Sheffield
Ashton, F. W., Hitchin
Austen, John, Sheffield
Austen, Mrs., Sheffield
Ball, A. W., London
Barclay, W., Sheffield
Barge, John, Plymouth
Barron, W., Cheltenham
Bates, James, Leamington
Beacock, J. H., Leeds
Bird, F. C. J., London
Blamey, C. A., Brighton
Blamey, Mrs., Brighton
Blow, Miss, Sheffield
Boorne, H. E., Bristol
Bourdas, Alice, London
Bourdas, I., London
Bowen, J. W., London
Bremridge, R., London
Brewis, E. T., London
Brinson, W., Sheffield
Brinson, Mrs., Chesterfield
Brinson, Miss Ruby, Chesterfield
Brodie, R., Glasgow
Carr, Percy, Sheffield
Chaplin, J. H., Wakefield
Clague, T. Maltby, Newcastle-on-Tyne
Clarke, R. Feaver, Gravesend
Clements, —, Manchester
Colley, H. W., Grimsby
Conyngham, H., Dublin
Conyngham, Mrs., Dublin
Cook, Harry, Chatham
Cooper, W. M., Sheffield
Cresswell, F., London
Cross, W. Gowen, Shrewsbury
Currie, W. L., Glasgow
Currie, Mrs., Glasgow
Daniel, E., London
Duncan, William, Edinburgh
Eardley, J. F., Sheffield
Eardley, Mrs., Sheffield
Eardley, Miss, Sheffield
Eberlin, A., Nottingham
Ellinor, G., Sheffield
Evans, Edward, jun., Liverpool
Evans, J. Herbert, Liverpool
Foggan, George, Bridlington
Foggan, Mrs., Bridlington
Fox, A. Russell, Sheffield
Fox, Miss G., Sheffield
Francis, Alan, London
Francis, Mrs., London
Frost, S. T., London
Gadd, H. Wippell, Exeter
Gerrard, A. W., Birmingham
Gibson, Adam, Edinburgh
Gibson, Miss, Edinburgh
Gibson, W. H., Brighton
Gibson, Ida M., Brighton
Giles, W., Aberdeen
Glyn-Jones, W. S., London
Glyn-Jones, Mrs., London
Grey, M. E., Hebburn-on-Tyne
Grier, James, Manchester
Grimes, H. C., Dublin
Hanson, A., Bradford
Hall, Mrs. Edward, Whaley Bridge
Hearn, John, London
Hill, J. R., Edinburgh
Hobbs, A. E., Tunbridge Wells
Hobbs, Miss M. O., Tunbridge Wells
Howie, W. L., London
Hull, J. W., Birmingham
Humphrey, John, London
Humphrey, Mrs., London
Idris, Emeline, London
Idris, H., London
Idris, K. M., London
Idris, T. H. W., London
Idris, W. H. W., London
Jackson, F. Gilbert, Sheffield
Jackson, J. Gilbert, Sheffield
Johnstone, C. A., Manchester
Jones, H. W., Coventry
Kay, J. P., Aberdeen
Keene, H., Bournemouth
Kemp, Harry, Manchester
Kennedy, D., Hawick
Kirkby, William, Manchester
Lawson, John, Dublin
Lenton, W. H., Liverpool
Lindsay, R., Peebles
Lindsay, Mrs., Peebles
Little, Miss, Whaley Bridge
Lothian, J., Glasgow
Maben, Thomas, London
MacEwan, Peter, London
Marsden, C. E., Stocksbridge
Marsden, R., Stocksbridge
Martin, N. H., Newcastle-on-Tyne
Martindale, W. H., London
Martindale, Mrs., London
Matthews, W., London
Middleton, A., Nottingham
Naylor, W. A. H., London
Newsholme, G. T. W., Sheffield
Newsholme, Mrs., Sheffield
Newsholme, Misses, Sheffield
Nicholl, J. W., Belfast
Owen, George, Sheffield
Parker, E. J. R., Nottingham
Parker, Mrs., Nottingham
Parker, Miss A. K., Nottingham
Parkinson, M., London
Pater, J. B., Sheffield
Pater, Miss, Sheffield
Peck, E. Saville, Cambridge
Percival, Tom, Sheffield
Perry, G. E., Birmingham
Pidd, A. J., Manchester
Pidd, Miss M. E., Manchester
Poole, J., Birmingham
Preston, Job, Sheffield
Preston, T. I., Leeds
Ransom, F., Hitchin
Ransom, Mrs., Hitchin
Reid, Miss, Glasgow
Robertson, John, Arbroath
Robertson, J. W., Arbroath
Robertson, George, Glasgow
Robertson, Mrs., Glasgow
Robinson, A., Sheffield
Robinson, R. A. (President Pharmaceutical Society), London
Rowland, G. H. C., Edinburgh
Russell, A. H., Dundee
Russell, James, Dundee
Sargeant, F. P., Leeds,
Savage, W. W., Brighton
Savage, B. A., Brighton
Savage, Miss, Brighton
Shacklady, J., Liverpool
Shepherd, J. W., Settle
Shepherd, Mrs., Settle
Shepherd, W., Settle
Smiley, J. A. R., Manchester
Smith, F. A. Upsher, Chesterfield
Smith, J. H., London
Smith, Jane G., London
Solomon, Albert H., London
Squire, George, Sheffield
Squire, Mrs. George, Sheffield
Stiles, M. H., Doncaster
Symes, C., Liverpool
Tankard, A. R., Sheffield
Taubman, R., London
Thomson, Miss, London
Tocher, J. F., Peterhead
Turney, J. Davy, Plymouth
Tyrer, T., London
Umney, J. C., London
Umney, Mrs., London
Vinden, F. W., Exeter
Vinden, H. F., Exeter
Vinden, Mrs., Exeter
Want, W. P., London
Watson-Will, W., London
Wells, W. F., Dublin
Wells, Mrs., Dublin
White, Edmund, London
White, Mrs., London
Wild, C. C., London
Wild, John, Manchester
Wild, Mrs., Manchester
Williams, H. G., Sheffield
Williams, Mrs. L., Sheffield
Williams, Miss, Sheffield
Wilson, W. P., Haddington
Woolley, S. W., London
Worfolk, G. W., Ilkley
Worfolk, Mrs., Ilkley
Worrall, J. H., Sheffield
Wright, R., Buxton
Yates, C. G., Brighton
Young, J. Rymer, Warrington
Young, Mrs., Warrington

Sheffield Sparklettes.

At the opening of the Conference the ladies made quite a brave show, their light dresses giving an agreeable relief to the sombre garb of their lords and masters. They stuck to their guns until after the complimentary speeches following on the President's address, then fled. Notwithstanding the mild chidings of the President, they occupied some time in the entrance making up their minds whither to go, but various suggestions to visit the Mappin Art Gallery, etc., fell through in favour of a tram-ride up to Fulwood, through the most fashionable suburb of the city, and back again by the Ecclesall route, the party filling the top of the car and being under the care and guidance of Mesdames Antcliffe, Austen, Squire, and Newsholme, among others.

* * *

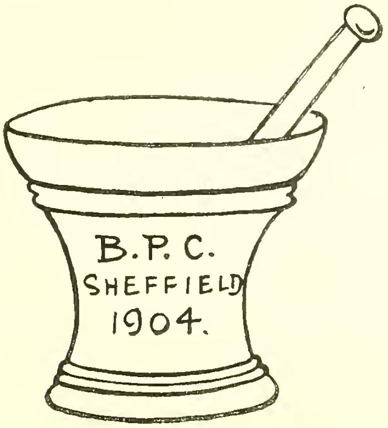
The Local Committee, keeping up their reputation for originality, had provided a gilt medallion for each of their members. The medallions of the Chairman, Vice-Chairman, Treasurer and Hon. Secretary had a bar attached showing legibly the office of the wearer, and the other members had pretty bars bearing the legend "Local Committee." These medallions were not only very neat and effective in themselves, but were of considerable assistance to visitors needing information, and will no doubt become a regular feature of the meetings in the future.

* * *

We were asked by several ladies to give a hint to Brighton ladies, and all that come after, to have a distinctive badge of their own—preferably a toque both chaste and *chic*—which the committee might provide. Any other ideas on this point will be welcomed by Mr. Savage, we feel sure.

* * *

The Sheffield Committee hit upon the happy idea of presenting each visitor to the Conference with a souvenir in the shape of a tiny mortar and pestle, of which our illustration gives the exact size. The mortar is modelled on a seventeenth-century specimen in the collection of Mr. John Austen, Ph.C., and is intended for use as a salt-cellar, the pestle forming the spoon. The memento is the work of Messrs. Walker & Hall, whose factory was visited by the Conference.



* * *

At Messrs. Walker & Hall's the visitors were met by the principal of the firm, that veteran freelance, Sir John Bingham, Bart., who in welcoming the members suggested that the party should be split up into several groups, and after signing the register this was done. The visitors were shown the various processes employed in the manufacture of electroplate and electro-gilding, and the series of processes whereby the crude metal was worked up into finished spoons and forks, entrée-dishes, etc. In the nickel-silver department the preparation of copper and tin was being made, which was then pressed into sheets of different thicknesses and punched into varied shapes, chased and variously treated to produce the handsome articles for which this firm is famous. The visitors took great interest in the gilding of the interior of the silver vessels, several ladies actually performing the process, by stirring a rod of gold in the vessel containing the cyanide solution. From the top of the building a magnificent view of the city, surrounding district, and enveloping smoke was obtained.

* * *

Tea was served at the end of each day's proceedings in the Montgomery Hall, which is the property of the Sheffield Sunday School Union, and is situated in Surrey Street, opposite the Town Hall.

* * *

On Tuesday there was another full-dress night, when a smoking-concert was held at headquarters, and in the ballroom adjoining as splendid a dance as Conference ladies have yet enjoyed. The dual programme was so nicely arranged, and the Æolian Glee-singers did their part so well, that in the dancing pauses the ladies and their escorts gave the smokers the pleasure of their company. The tone was correct from the beginning to the end.

* * *

During the evening the pathetic sight was witnessed of the Chairman of the Local Committee wandering round imploring visitors to go and patronise the refreshment department. He had looked into the room an hour after the dance started and was horrified to find the place deserted. As a result of Mr. Newsholme's promptings there was a rush on the resources, and shortly afterwards gallant cavaliers were to be seen flying about with drawn swords (metaphorically) looking for a waiter to pin to the wall in the search for refreshment for their ladyes faire. However, the deficiency was speedily remedied, swords were sheathed, and all went merry as a marriage-bell. Those who attempted to sleep upstairs were thankful when two o'clock struck, and the last whispered "Good-night" was said.

* * *

The weather on Wednesday morning was not too promising for the ladies' drive, but after a smart shower a bright spell came along and the party of about eighty (including some twenty-five gentlemen) set off to drive up to Redmires. The little excursion was a great success. The stone walls which take the place of the ordinary fence in the country-side here excited some comment, and the better half of one of the most prominent of the visitors was heard to sigh for the transference of these stones to take the place of the eternal brick of London streets. Arriving at Redmires, the male portion of the party adjourned for light refreshment, whilst the ladies went to view the dams; and apparently these proved a real attraction, for there was considerable difficulty in gathering the members again for the return journey. On the way back the excursionists, when passing the Sandygate golf-links, had a glimpse of Mr. J. F. Eardley, Mr. Edward Evans, and their compatriots engaged in a friendly game with the sticks, and a great waving of handkerchiefs and cheering ensued. The party turned up to luncheon with guilty looks considerably after time, and some husbands smiled!

* * *

The Golf Cup was not played for, but a few visitors, including Mr. Edward Evans, jun., sampled the course and were pleased.

* * *

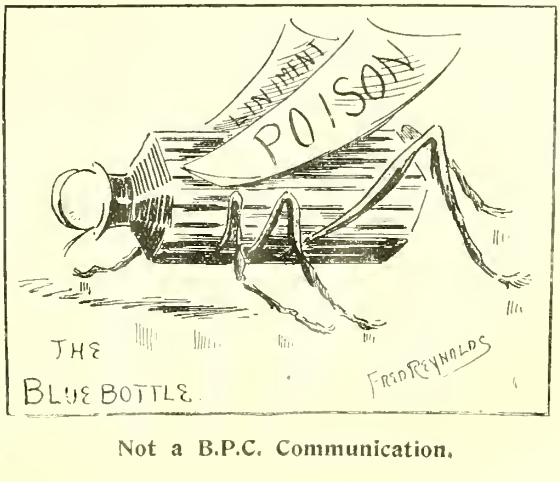
On Wednesday many visited Messrs. Mappin & Webb's showrooms and works, and those of Messrs. Joseph Rodgers & Sons. The principal industrial item of this day, however, was a visit to Messrs. Cammell Laird & Co.'s steelworks, where the firm gave each one of the party a printed programme to guide in the two hours' inspection. This visit was much appreciated. Special trams were to have brought the party back, but the firm provided char-a-bancs to take the party from one works to the other and bring them back to the hotels. Armour plates were seen in the process of rolling, and much molten metal was in evidence. Of dirt and heat there was much, and the party seemed very tired when they got back at about eight.

* * *

Mr. Edward Evans, jun., was the Chairman at the smoking-concert held at headquarters on Wednesday evening, after the party came back from the armour-plate making demonstration. Ladies were present at the concert, and supplied a good deal of the talent. Mr. J. C. Umney acted as accompanist.

* * *

Seven coaches and eight carriages containing 220 members and their friends left the headquarters at 9.30 on Thursday morning for the round trip arranged by the Local Committee. The weather was showery and chilly up to the arrival of the party at Chatsworth at twelve o'clock, but after that it became brighter. A sumptuous luncheon was served at the Peacock Inn, Baslow, at about a quarter to two o'clock. At Chatsworth the party lingered over the gardens, which were delightful and seemed to have more attractions for them than the house. After luncheon the journey was resumed.



Not a B.P.C. Communication.

The Conference Excursion.

Taking his bicycle and a friend who knew the road well, a representative of the The Chemist and Druggist the other day traversed the ground which members of the British Pharmaceutical Conference are exploring while these pages are being printed. We subjoin his notes, and illustrate them with a few pictures. Those of Haddon Hall on p. 292 are from photographs by Mr. J. Gilbert Jackson, chemist, Sheffield. The largest one of these is worthy of David Murray, so artistically has Mr. Jackson caught the incomparable setting of this ancient English keep.

We leave headquarters at 9 A.M. and make for the Moor, thence to Ecclesall Road, through the outskirts of the city into the country. At the Endcliffe Woods commences the first of a series of rises culminating in the ridge overlooking the lovely valley of the Derwent. Reaching the brow of the hill, green fields take the place of bricks and mortar, and a two-miles run on a fair level takes us to Whirlow Bridge, where the drivers descend and refresh their horses. Resuming we soon get into Derbyshire. We glance back: the city has disappeared. Save for a slight smoke haze in the distance there might be no such place as Sheffield in existence. A little further ahead the first view of the Derbyshire hills is unfolded, the round heather-covered hilltops on the horizon showing in sharp contrast to the green fields which creep up their sides.

Perched on the skyline are two trees that stand out like a ship in full sail.

The road now is ever winding, ever rising, and wilder at every turn. At last we are on Stony Ridge, and again the magnificence of what we have traversed makes us glance back. The old tollbar at Stony Ridge stands 1,250 feet above sea-level. Across the valley we just see Eyam Moor and the Kinderscout Ridge, and on the Hathersage Moors to the right lies Carl's Wark, the remains of one of the oldest hill forts in existence, supposed to have been built by the "One-eyed Odin," hence "Odin's Fort" or the "Old One's Fort."

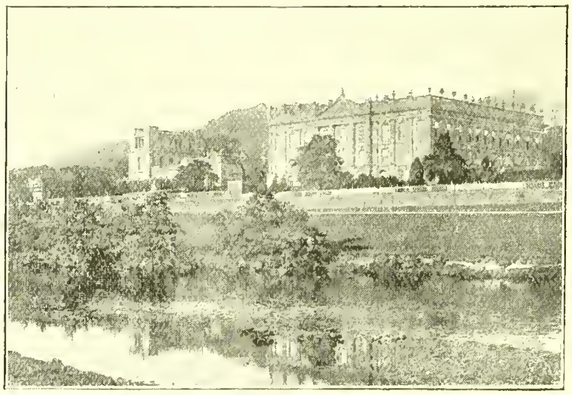
A short run down brings us to Fox House Inn, a famous hostelry, where custom demands a halt. Near this the road to the right leads to "The Surprise," where, at a sudden turn in the road between two rocks, a glorious view of the valley presents itself: the Switzerland of England, as Ruskin described the Peak district. By and by Hathersage recalls "Jane Eyre" to us, and when the carriages, turning to the left after leaving the Fox House, go down Froggatt Edge we are conscious that this is one of the finest drives in the Kingdom. The view is magnificent and reminiscent of "Peveril of the Peak." Near the bottom of the hill is the Chequers, another pleasantly situated inn, with a fine outlook over the river. The road crosses the Derwent at New Bridge and ere long, after passing through Calver and Baslow, we get a glimpse of

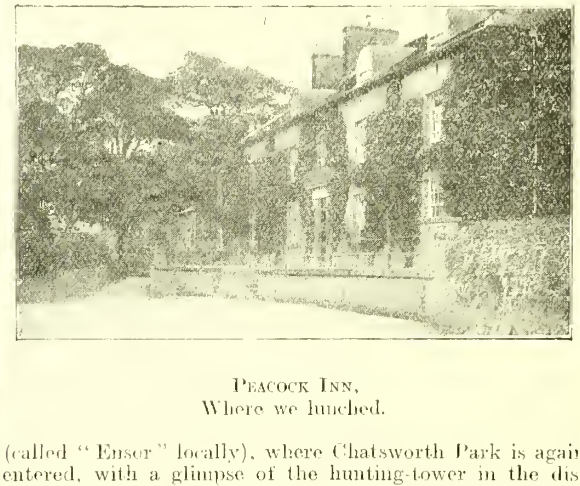
Chatsworth House,

beautifully situated on ground sloping to the river. The building was designed by William Talman, a pupil of Wren's, and was commenced by the fourth Earl of Devonshire in 1687 and finished in 1706. The north wing was added by William Cavendish, the sixth Duke. It is here that our present King delights to spend a few days with his friend the Duke. The gardens naturally attract Conference botanists, for there are many interesting plants in it which are rare even in ducal grounds. Mr. W. Chester, the Duke of Devonshire's chief gardener, has favoured us with the following list of them:

Date palms in variety
Cocos ,,
Areca ,,
Sugar-cane
Bamboos in variety
Ficus ,,
Musa ,,
Agave ,,
Citron and Orange
Carica (the papaw-tree)
Olea fragrans
Pepper-plant
Egyptian paper rush
Cycas revoluta
Monstera
Encephalartos in variety
Passiflora ,,
Renanthera coccinea
Calathea zebrina
Cinnamon-tree
Franciscea in variety
Euphorbia splendens
Bougainvillea glabra
Ægle Marmelos
Tree ferns in variety
Strelitzia ,,
Araucaria brasiliensis
Heritiera macrophylla
Cactus-plants in variety
Xylophylla latifolia
Sarracenia purpurea (American pitcher-plant)
Dionea muscipula (Venus's fly-trap)
Drosera rotundifolia (English sundew)
Ouvirandria fenestralis and Bernieriana (Lattice-leaf plant of Madagascar)
Victoria Regia
Euralia Ferox
Nelumbium speciosum
Nymphæa in variety
Eucalyptus globulus
Canna (Indian shot)

After exhausting the treasures of this magnificent residence, the excursionists return to Baslow, where at the Peacock a luncheon awaits them. The road after this takes us straight to the quaint model village of Edensor (called "Ensor" locally), where Chatsworth Park is again entered, with a glimpse of the hunting-tower in the distance. In the village church (completed in 1870 from the designs of Sir Gilbert Scott, R.A.) there are monuments to "Bess of Hardwick," whose second son by her second husband, Sir William Cavendish (she was married four times), was created the first Earl of Devonshire; and to John Beton (Bethune, brother of the cardinal who was done to death on Magnus Muir), the confidential servant of Mary Queen of Scots, who died during that Queen's first visit to Chatsworth. In the churchyard is the grave of Lord Frederick Cavendish.


Chatsworth House.


Peacock Inn,
Where we lunched.

The drive through the park terminates near Beeley, a pretty village noted for its grindstones, and a church with a Norman doorway and a sixteenth-century embattled tower. Then we go on to Rowsley, beloved of painters and enthusiasts with the rod, and after a short run reach the chief attraction of the day,

Haddon Hall.

This is the finest example of the old unfortified baronial hall in the country. The main part of the buildings is said to date from 1300 to 1600, and although it has been unoccupied for the past century it is in splendid preservation. The hall, which was bestowed by William the Conqueror on his natural son William Peveril, stands on a slight eminence rising from the river Wye. The property passed by marriage during the reign of Richard I. into the Vernon family, and on the death of Sir George Vernon, in 1567, the Manners became owners through the clandestine marriage of Dorothy Vernon, one of his daughters, to Sir John Manners. Who knows not Dorothy Vernon? There is the small oratory from which she watched for the coming of her lover; the lattice that kept her out of his arms; and here is the famous staircase by which Dorothy stole away during the masked ball in honour of her elder sister's nuptials on the night of the elopement. The banqueting-hall itself would be famous without a Dorothy Vernon, and no denial by the Duchess of Rutland of the truth of the romance can rob this hall of its old English interest. The rafters ring with the ghost-voices of many an old-world carousal and elfin laughter of merry men and maidens long since dead.

Running off the left of the road on to Bakewell from Rowsley is the path to Lathkill Dale, a pearl of scenery. But we meander rather through the fields from Haddon to Bakewell, whose baths were in vogue in the time of the Saxons. The most interesting place in the old town is the parish church of All Saints, a cruciform structure believed to have been erected by William Peveril in 1110, but there are bits of Saxon, Norman, and Early English in it, and the Vernon Chapel (founded in 1360) is in the Later Decorated style. The building was completely restored sixty years ago. The Vernons and Manners are buried here, Dorothy and her husband side by side in the south end of the chapel, in memorial if not in fact. The church yard contains many curious epitaphs; the tomb of John Dale, a barber-surgeon, tells us:

> That on the 8th of April, in the year of grace, 1737, the rambling remains of John Dale were, in the eighty-sixth year of his pilgrimage, laid upon his two wives.
>
> This thing in life might cause some jealousy;
> Here all three lye most lovingly.
> But from embraces here no pleasure flows;
> Alike are here all human joys & woes.
> Here Sarah's chiding John no longer hears,
> And old John's rambling Sarah no more fears,
> A period's come to all their toylsome lives;
> The good man's quiet - still are both his wives.

With Haddon Hall the interest of the day seems over, but at Baslow a cup of tea in the Peacock warms us up again to the charm of "the moors; the moors; the purple moors!" through which we are to pass, the assurance that there is another Peacock at Owler Bar helping to jog on the horses where a refreshing draught of meal-and-water awaits them. From the Peacock the road drops down past the Cross Scythes Inn at Totley into Dore, where history was made as long ago as 827, when Egbert was acknowledged King of All England by the Northumbrian thanes; the road afterwards runs on into Beauchief by the side of the Dore and Chinley line, which has opened up the Peak district to such a wonderful extent in recent years. Lying to the right of the road, on the other side of the line, are the ruins of Beauchief Abbey, founded by Robert Fitz-Ranulph, Lord of Alfreton, who is said to have been one of the murderers of Thomas à Becket. Although the date of the first occupation of the Abbey is not definitely known, it was probably first occupied by an Abbot and half-a-dozen Canons of the Premonstratensian Order about 1180. It is an important and interesting specimen of monastic architecture. There is still much of historic interest to see, but the bicycle creaks, the joints stiffen, and there is a nip in the air that helps to conjure up the warm supper awaiting us at Sheffield.

Beauchief Abbey.

Association Ballads.

The Purpose.

The men, their aims, their daily irk;
Their troubles, trials, thoughts, and views
On things politic, foes that lurk
In friendly guise, but treach'rous work—
These be the burden of our Muse.

XXXI. THE FEDERATION.

The scattered fragments of the Craft
Are gathered featly once a year,
And Scorners who have erstwhile laughed
Remain to cheer.

The F.L.A. its course pursues
In grim, tenacious, quiet way;
It packs its interchange of views
In one brief day.

Throughout the year it guards the Keep,
It watches o'er the Jacks and Jills
Who'd crack their crowns should Curries sleep
Or Watson-Wills.

The Craft has had to stand confessed
It thought that "Co." a "person" meant;
But much was clear; for less was guessed
Ere Merson went.

We thought a title all our own
Was saved when almost all was wrecked;
But that died also, and a groan
Went up unchecked.

With Tocher's territorial ties
It binds itself and hopes to thrive,
By reason of its calm and wise
Execu-tive

The Delegates to Sheffield go,
They talk of Things and not in vain,
And when the tide of Speech is low,
Go home again.

'Tis thus the scattered Atoms group
And form a magic molecule;
They link the pharmaceutic loop
Symbolic-ule.

Personalities.

Mr. E. J. Adcock, a well-known chemist in the Transvaal, who has been on a visit to this country, sailed for South Africa on August 13.

Mr. Robert Drane, chemist and druggist, Cardiff, has received the thanks of the Corporation of that borough for a gift of two examples of old English pottery, for the pottery collection in the museum.

Sir John Brunner, M.P., has contributed 50*l.* to the fund now being raised for the extension of Hampstead Heath; and Mr. Samuel Figgis, drug and produce broker, Fenchurch Street, E.C., has sent 25*l.*

Dr. George Senter, pharmaceutical chemist, has been appointed lecturer in chemistry at St. Mary's Hospital medical school. Dr. Senter is one of the few Scotchmen who have held the Bell Scholarship.

The name of Mr. John R. Johnson, pharmaceutical chemist, of the Apothecaries' Hall, Blackfriars, E.C., appears in the first division of last month's pass-list of the Inter-Science Examination, London University.

Mr. William Mair, F.C.S., of Messrs. Fletcher, Fletcher & Co. (Limited), manufacturing chemists, Holloway, London, N., sails in the s.s. *Minnehaha* on August 20 from London on a visit to the United States and the St. Louis Exhibition.

Dr. W. H. Symons, medical officer of health, Bath (formerly a member of the Pharmaceutical Board of Examiners), has completed a geological model of the city of Bath and the surrounding district, covering an area of thirty-six square miles. The model has been placed in the museum of the Royal Literary and Philosophical Institution of the city.

Westminster Wisdom.

(From our Parliamentary Representative.)

Lymph.

In the course of discussion on the Scotch estimates, Mr. Weir further complained that humanised lymph, the use of which was condemned in every civilised country, was still used in Scotland, though it was not allowed to be used in England. He attributed its use to the carelessness of the Local Government Board in the performance of its duties. The Lord Advocate, in the course of his reply, explained that they got their supplies of lymph to a large extent from the English Local Government Board, as there was no apparent necessity for setting up a separate establishment in Scotland for the supply of lymph. Sir Walter Foster, who also referred to the subject, said he hoped the use of humanised lymph would soon disappear altogether. There was no necessity for it, and he held that it was one of the duties of the Government to supply proper lymph for the purpose of re-vaccination.

Medical and Dental Companies.

The return for which Sir John Tuke moved, showing the number and names of companies registered under the Companies Act, 1862, in England and Wales, Scotland, and Ireland, for the specific purpose of carrying on medical and dental practices, has now been issued. It shows that fifteen companies for the purpose of carrying on medical practice have been registered in England and Wales. Included among them are the Dean Drug Company, the Ison's Eye and Ear Dispensary, and the Wirral Homœopathic Dispensary. The number of companies registered in England and Wales for the purpose of carrying on dental practice is sixty-five, including the London Drug and Dental Company, of New Broad Street, E.C. Only four companies are registered in England and Wales for the specific purpose of carrying on medical and dental practices. No companies are registered in Scotland or in Ireland for carrying on medical practice, but three are registered for carrying on dental practice in Scotland and twenty-two in Ireland.

Meat-preservation.

Mr. Alfred Davies asked the Secretary to the Local Government Board at the end of last week if he could state the various methods by which decomposition is arrested in meat imported from abroad, and if he was aware that boric acid is frequently injected into the carcases of animals for export at the time of killing, and that experiments had been tried, with the result that on arrival bicarbonate of soda is found to effervesce on the meat so treated; and whether he had any official reports on the effect of the partaking of boric acid upon human beings. Mr. Walter Long, who replied to the question, said he understood that the ordinary methods by which decomposition was prevented or arrested in meat coming from abroad were (1) cold-storage, (2) salting with or without drying, and (3) preservation in cans. According to the evidence given before the Departmental Committee on Food-preservatives, borax and boric acid were largely used for the preservation of bacon, hams, sausages, and other preserved meats, but not by means of injection into carcases of animals at the time of killing. No evidence appeared to have been given to show that carcases of butchers' meat are preserved in this way. He had no information as to the alleged experiments, nor had any reports been made to him on the effect upon human beings of partaking of boric acid.

The Alcohol-duties.

On the motion of Mr. Louis Sinclair, a return was on Thursday ordered to be presented to Parliament dealing with the exemption of alcohol from duty for the years 1902-3 and 1903-4 respectively. The return will show, in respect of these two years, the number of applications made and the number granted of exemptions of alcohol for trade-purposes. Also the quantity of spirits on which exemption was granted. Similar particulars are asked for in respect of applications for scientific or educational purposes.

Business Changes.

Properly authenticated business notices (not being advertisements) are inserted in this section free of charge if promptly communicated to the Editor.

Well's Drug-stores will shortly be opened at 239 Well Street, Hackney, N.E.

Messrs. M. E. Holdsworth (Limited), confectioners' sundriesmen, of Bradford, have removed to Swan Buildings, Swan Street, Manchester.

Boots (Limited) have removed their Accrington branch from 17 Post Office Arcade to 89-91 Blackburn Road, Accrington.

The Rose Remedy Company, manufacturers of the "Sero" toilet-preparations, have removed from 434 Strand, W.C., to 89 Bishopsgate Without, E.C.

Messrs. Jas. Epps & Co., homœopathic chemists, in consequence of the expiration of lease, have removed from 170 Piccadilly to 60 Jermyn Street, S.W.

Mr. F. J. Flatman, chemist and druggist, has opened a handsome high-class pharmacy at 108 Western Road, Hove, which was fitted by Messrs. J. Bygrave & Sons, of City Road, London, E.C.

Mr. F. Perrett, chemist and druggist, and Mr. T. Rawlins, chemist and druggist, have been taken into partnership by Messrs. Williams & Peters, of Fortess Road, N.W. Both gentlemen served their apprenticeships with Mr. David Peters, the head of the firm, and subsequently had experience in City and West-end establishments. Continental experience followed, and thus the new partners will strengthen the cosmopolitan character of Williams, Peters & Co., as the new firm is to be entitled.

Bankruptcies and Failures.

Re Johnson Holmes, 26 Clarendon Street, Wolverhampton, Chemist.—This debtor appeared before the Registrar (Mr. Kettle), at the Wolverhampton County Court on August 10, for his public examination. A statement of affairs appeared in our issue of July 23, page 122. In reply to the Official Receiver (Mr. Pain Wells Page), debtor stated that he was sixty years of age, and up to the year 1895 he traded in different parts of Wolverhampton as a chemist, chiefly at the corner of Clarendon Terrace, Chapel Ash. The shop in which he there carried on business and two houses adjoining in Clarendon Street were his own property, which he had purchased for 1,500*l.* But there was a first mortgage upon them of 900*l.*, and he afterwards obtained a second mortgage of 200*l.* In 1895 he carried on business as a chemist in two shops—one in Queen Street and one in Worcester Street. He gave up the one in Worcester Street, selling the stock, etc., for about 14*l.*, and later on in the same year he sold his business in Queen Street, realising from it about 120*l.* At that time he considered he owed altogether, in trade and other debts, about 200*l.*; but, calculating the marginal value of his property in Chapel Ash, he considered at that time he was practically solvent. Since 1895 the only business he had carried on was that of making horse-powders and a composition for the protection of boilers. He tried to sell his property in Chapel Ash, but the highest bid offered for it was only 1,100*l.*, and it was withdrawn. It had since passed out of his hands. The shop in Chapel Ash had been vacant for the last three years, so that he had received no rent from it during that time. In June, 1901, he took his son (Thomas Holmes) into partnership, and they traded together as boiler-composition makers at 26 Clarendon Street. They had practically no capital, beyond the plant required for the business, which was only worth 12*l.* They had, however, done very little business for some time past, and it was now carried on by his son. He attributed his insolvency to "depreciation of his property at Chapel Ash, and bad trade." The debtor was questioned at some length as to whether he had lost any money by betting or gambling. He denied that he had at least, he added, for the last ten years. Pressed on this point by the Official Receiver and Registrar, debtor admitted that he had occasionally, during that period, attended race-meetings at Birmingham and Wolverhampton, when he wanted a day's outing, but not very often. His bets were limited to half a crown or to a crown at most. After further questions the examination was adjourned.

Re William E. Geddes, 17 Farringdon Avenue, E.C., lately trading as the Geddes Manufacturing Company.—This debtor attended on August 11 at the London Bankruptcy Court, before Mr. Registrar Hope, in relation to his public examination, when Mr. H. E. Burges (Assistant Receiver) reported that the statement of affairs had only just been filed, and he wanted an adjournment for the purposes of investigation By consent of all parties the hearing was adjourned to October 27. The failure is attributed by the debtor to his dismissal from the St. Jacobs Oil Company and to the consequent loss of his salary of 1,500*l.* per annum; also to illness. The statement of affairs shows unsecured debts 1,327*l.* 5*s.* and a fully secured debt of 345*l.*, the creditor holding security to the value of 1,000*l.* The assets consist of the estimated surplus of 655*l.* from such security, good book-debts 40*l.*, and a claim for damages against the St. Jacobs Oil Company, the value of which has yet to be ascertained.

Deed of Arrangement.

Re James R. Ashby, Front Street, Dipton, Drysalter.—In this matter the following are scheduled:

Ismay, J., & Sons (Limited), Newcastle	£34	0	0
Lowes, J., Consett	42	0	0
Southall Brothers & Barclay (Limited), Birmingham	10	0	0
Wilkinson & Simpson, Newcastle ...	63	0	0
Bankers' Claims	25	0	0

Gazette.

Partnership Dissolved.

Kennedy, J. B., and **Welply, G. C.,** under the style of Kennedy & Welply, Stratford Hall, Romford Road, The Broadway, and The Grove, all Stratford, E., medical practitioners.

The Bankruptcy Acts, 1883 and 1890.

Receiving Orders.

Cooke, Vernon Russell de Landre, Bradford, medical practitioner.

Hahn Vivers & Co., Mincing Lane, E.C., wax importers.

Company News.

Mellin's Food Company for Australia and New Zealand reports a trading profit of 7,599*l.* for the past year. After paying the preference dividend of 6 per cent. 1,400*l.* is carried forward.

Edme (Limited).—In the Chancery Division on August 6, Mr. Justice Buckley granted the petition for the reduction of the capital of Edme (Limited), subject to the consent of a shareholder, who wrote opposing the reduction, being obtained.

Manx Salt and Alkali Company (Limited).—The annual report states that there are now three large pans at work in Ramsey for making common and fishery salt. The flow of brine from the borehole at Point of Ayr continues to increase. An extension of works is contemplated. The trading-account for the year shows a profit of 99*l.*

W. & H. M. Goulding (Limited).—The directors of this Cork and Dublin chemical company state that the net profits for the past year amounted to 37,634*l.* Dividends are declared at the rate of 5½ per cent. on the preference shares, and 3*s.* 6*d.* per share on the ordinary shares, for each of the previous six months, or 7 per cent. per annum.

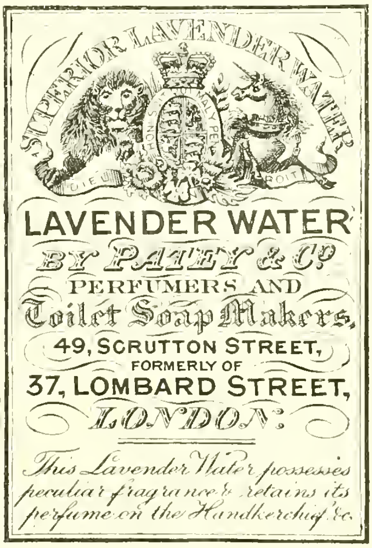
The Exportation of Copal from the Congo Free State during 1903 increased by 2,243 kilos. over 1902, while that of arachides, palm oil, and palm nuts decreased by 6,968, 129,859, and 254,514 kilos. respectively.

Trade Notes.

"Dentistry for Chemists."—Messrs. Wardale & Co., 132 High Street North, East Ham, whose booklet with this title has become so popular with chemists all over the world, have recently issued a new price-list. They have also put on the market a "strengthened vulcanite" dental plate that comes as near the ideal as possible. It is light, and yet so strong that a vicious and prolonged banging on the editorial oilcloth has failed to make the slightest impression on it. Considering that about 90 per cent. of the breakages in dentures are caused by a sharp rap with a brush while cleaning, or by dropping the plate on the floor, this stern unbreakableness ought to be the highest of recommendations.

New "B.W." Preparations.—The latest productions from the Snow Hill laboratories of Messrs. Burroughs Wellcome & Co. include a "tabloid" ophthalmic containing $\frac{1}{150}$ grain of zinc sulphate and $\frac{1}{20}$ grain of cocaine hydrochloride in combination. These tiny discs will be found useful when it is desired to prescribe painlessly an astringent in ophthalmic practice. They are readily soluble on the conjunctiva, and are very rapid in action. They are issued in tiny tubes of twenty-five. The latest "soloid" is that of mercuric potassium iodide gr. 4.37. One dissolved in 10 oz. of water forms a solution of 1 in 1,000—the ordinary mercury-biniodide solution used in surgical practice. "Soloid" mercuric potassium iodide is coloured pinkish as a safeguard against errors. There is a series of three, the weakest containing 1.75 grain, and the strongest 8.75 grains. These are all issued in bottles of 25 and a hundred each.

"Toiletry."—A selection of good-class toilet-preparations from Messrs. Patey & Co., perfumers, 49 Scrutton Street, E.C., before us, demonstrates that the vitality of this old-established perfumery firm is increasing with the years. Patey's cold-cream is a staple known to chemists of more than one decade, and "Pomade Divine" has stood the test of years as a safe and certain healing application. Patey's lavender-water is put up in old-fashioned green bottles, labelled as shown. Patey's English eau de Cologne is also nicely produced, and there is a series of concentrated essences put up in sprinkler-stoppered bottles. Messrs. Patey seem to be particularly strong in toilet-powders. There are violet powders and rose powders in tastefully decorated cardboard boxes or round tins with effective labels and mirror bottoms, and an old-fashioned-looking millefleur-and-violet scented powder. Toilet-soaps are likewise a speciality, the brown Windsor being particularly good.



A "P.D." Preparation.—In our report of the British Medical Association at Oxford (*C. & D.*, July 30, page 213) we referred to the new digitalis preparation called "Digitalone" exhibited by Messrs. Parke, Davis & Co., of 111 Queen Victoria Street, E.C. We have recently had an opportunity of more closely examining this preparation, and find that it is specially prepared for hypodermic use. It is claimed by the makers that it is a non-alcoholic, non-irritating, aseptic, and permanent solution representing all the principles of digitalis and possessing none of the irritating after-effects of the hypodermic injection of digitalin. Some lantern-slides shown by Mr. Maben at the exhibition demonstrated the non-irritating properties and uniform physiological activity of digitalone very clearly. It is a straw-coloured pleasant-tasting liquid, and is standardised by physiological assay. The solution is put on the market in 1-oz. bottles, and is equal in strength to one-tenth that of the fluid extract or four-fifths that of tinctura digitalis, B.P., the dose hypodermically being from 8 to 15 minims. The price is 1*s.* 6*d.* per oz.

Marriages.

Fleet—Whitlock.—On August 10, at St. Cuthbert's Church, Bedford, John Thomas Fleet, F.C.S., chemist and druggist, of Rugby, to Margaret Boulton, eldest daughter of Mr. John Whitlock, Fernside, Bedford.

Grant—Ross.—At the Imperial Hotel, Aberdeen, on August 1, by the Rev. W. Mackintosh Mackay, B.D., assisted by the Rev. Maxwell J. Wright, M.A., Forbes C. Grant to Margaret Jane, elder daughter of the late Mr. Andrew Ross, chemist, Aberdeen.

Molyneux—Pears.—On August 4, at Selborne Church, Hants, by the Rev. Arthur Kaye, Vicar, Alfred Molyneux, fourth son of the late Mr. Thomas Lees Molyneux, of Brooklands, Cheshire, to Elizabeth, second daughter of Mr. Andrew Pears, of Selborne, Hants, and of A. & F. Pears (Limited), Isleworth.

Stedman—Baddington.—At St. Mary's Church, West Malling, Kent, on August 3, by the Rev. A. W. Lawson, Vicar of West Malling, and the Rev. G. Jackson, Rector of Snodland, Arthur Stedman, chemist and druggist, Snodland, to Edith Audrey, daughter of Mr. William Baddington, of Kenilworth.

Wilson—Moody.—On August 9, at the Priory Church, Bridlington, by the Rev. J. Allan Pride, D.C.L., Harold Wilson, B.Sc. (Lond.), pharmaceutical chemist, of Putney, S.W., to Edith Mary, youngest daughter of Mr. George Moody, High Street, Bridlington.

Deaths.

Banks.—On August 8 the death took place on the Continent, where he was taking a holiday, of the well-known Liverpool surgeon, Sir William Mitchell Banks. Sir William's death, which was due to angina pectoris, was unexpected. He was born in 1842 in Edinburgh, where he was educated and took his M.D. degree, gaining the Edinburgh University gold medal. He subsequently acted as demonstrator of anatomy in Glasgow University for two years, relinquishing the appointment for a position in Liverpool as consulting and operating surgeon and teacher of anatomy. He was Emeritus Professor of Anatomy at Liverpool University, and served on the General Medical Council and on the Council of the Royal College of Surgeons of England. His name will be associated with operative measures for the removal of cancer of the breast, and as the author of surgical papers on cancer and rupture. In 1892 Sir William Banks was appointed a Magistrate and he was knighted in 1899.

Barry.—At Holly Bank, Cliftonville, Northampton, on August 3, Mr. James Barry, J.P., aged eighty-two. Mr. Barry was descended from Walter Edward Barry, a London tradesman who died in 1805. Walter Barry had two sons—Sir Charles Barry, the architect, who began the present Houses of Parliament, and Mr. George Barry, who established a chemist's business in Northampton. Mr. George Barry was a well-known public man in Northampton, and built up a fine business to which his two sons James and Edwin succeeded, on his death in 1860. Nine years later Edwin died, leaving James the proprietor of one of the most prosperous chemist's businesses in the Midlands, from which he retired a little more than twenty years ago. A devoted Churchman, Mr. Barry was for more than forty years churchwarden of the principal church of Northampton. He was for very many years the Conservative leader in Northampton. He was elected Mayor in 1865, was re-elected to the Mayoralty in 1888, and had been closely identified with the Town Council until his death. He was placed upon the Commission of the Peace for the borough in 1868. In 1874 he was elected to the Northampton School Board, of which he became Vice-Chairman, and in 1886 he was elected Chairman, a position he held for fifteen years. His educational work alone would make his life a treasured memory for many generations. As a recognition of his lifelong and unselfish devotion to the best interests of the borough the Town Council on May 6, 1901, presented him with the honorary freedom of the borough—an honour only conferred upon one other citizen—the late Sir Philip Manfield. In 1902 Mr. Barry's portrait was presented to him through the public subscriptions of all classes of the community in the district as a recognition of his public work. Mr. Barry's public and private philanthropy was very great. Mr. Barry married in middle life Mrs. Payne, sister of the late Mr. Pickering Phipps, who was member of Parliament for Northampton and South Northamptonshire. Mr. Barry leaves no family. Among his near relatives are his cousin Bishop Barry, D.D., formerly Bishop of Sydney and Primate of Australia, and Sir John Wolfe Barry, the eminent engineer. Mr. Barry was always a welcome visitor at the annual dinner of the Northampton Chemists' Association. The funeral, an impressive public and civic demonstration, took place at All Saints' Church, Northampton, and the Corporation Cemetery on August 6.

Freeman.—On August 10, at 126 Luton Road, Chatham, John Freeman, only child of Arthur Alexander Freeman, chemist and druggist, aged two years.

Vigis.—At 4 South Hayes, Wells Road, Bath, on August 5, Mr. Joseph Lewis Vigis, chemist and druggist, aged fifty-six. Mr. Vigis had carried on business at Chapel Row, Westmoreland Mart, and Northumberland Passage for many years, and was well known in the city of Bath. He was a Dickens enthusiast and obtained much popularity as a lecturer on the works of the great novelist. His "Chats with Dickens" were known far and wide, and mainly on account of his enthusiasm the local membership to the Dickens Fellowship was greatly increased. Mr. Vigis was born in Cornwall. His wife predeceased him, but he leaves two daughters and one son, who was seriously wounded in the Boer War. The funeral took place on August 8, at Midsomer Norton.

Recent Wills.

Allen.—The will of the late Mr. Alfred Henry Allen, analytical chemist, 8 Broomfield Road, Sheffield, public analyst for Sheffield and the West Riding of Yorkshire, who died on July 14, has been proved by Mrs. Allen and Miss Maude B. Allen, the widow and daughter of the testator, whose estate is entered at 200*l.*, "so far as can at present be ascertained." Mr. Allen's will is dated April 18, 1899, and there are two codicils. He waived certain debts due to him, and he bequeathed 24*l.* to his sister, Maria Louisa Dudley. He left to his assistant, Mr. John Thomas Stevenson, 50*l.* or 100*l.* conditionally on certain arrangements in regard to the testator's business and to winding-up his estate being carried out. All the rest of his property the deceased left for the use and benefit of his widow and children, with power of anticipation.

Greensill.—Mr. Frank Greensill, chemist and druggist, of Douglas, Isle of Man, the proprietor of the famous "Mona Bouquet," who died on July 1, has left personalty valued at 500*l.*

Hearne.—The will of the late Mr. Robert Moore Hearne, chemist and druggist, of 303 Cleethorpe Road, Great Grimsby, who died on April 24, has been proved at 3,662*l.* 11*s.* 10*d.* gross, the net personalty being 2,355*l.* 15*s.*

Whiffen.—The will of the late Mr. Thomas Whiffen, of Cerris House, West Hill, Putney, and Lombard Road, Battersea, senior partner in the firm of George Atkinson & Co., St. Andrew's Hill, chemical manufacturers, who died on March 27, has been proved at 309,271*l.*, of which 279,435*l.* is net personalty. He bequeathed 8,000*l.* to various London hospitals and public charities. Among private bequests he left 8,000*l.* in trust for his grandson, Herbert George Whiffen; 10,000*l.* stock in trust for his daughter, Emma Faith Whiffen, for life, and then to the children of his son, Thomas Joseph; 10,000*l.* to his son, William George; 100*l.* to Alfred Thomas Hare; an annuity of 90*l.* to Sarah Agate; 1,000*l.* to his daughter-in-law, Jessie Ann Whiffen; and 100*l.* to his sister, Eliza Whiffen. The residue of his property, including the businesses at Battersea and Southall, he left to his sons, Thomas Joseph Whiffen, of Harefield, Southfields, and William George Whiffen, of The Chestnuts, Park Side, Wimbledon, share and share alike.

American Notes.

A Firm of Druggists in an Iowa city are defendants in an action for damages of peculiar interest. The plaintiff is a woman who asks for $10,000 on the ground that the defendants sold intoxicating liquors to her husband, and thereby caused his health to be so badly impaired that he was incapacitated for bodily work, and consequently for supporting her. The case is to be tried some time during the present month.

Ohio Cod-liver Oil.—The State Food Commission of Ohio recently examined six samples of so-called cod-liver oil purchased in the open market, and discovered that four of these contained not a trace of the oil! The two specimens that were found *bona fide* had been prepared in the State, and the other four had been put up outside the State and sent over the borders in order to escape the possibility of legal prosecution.

A Bitter Beverage.—"Hostetter's Bitters" has been one of the best selling patent medicines in America for a great many years. It contains a large percentage of alcohol, and is said to be used in a good many "no-licence" communities in America as a beverage. Recently Mrs. Hostetter, the widow of the original proprietor, died, and the will which she left indicates that the Hostetter estate is valued at something over five million dollars!

Against the Sale of Narcotics.—An ordinance regulating the sale of cocaine, morphine, and opium has recently been passed by the Common Council of Nebraska City, Nebraska. Perhaps fifteen similar laws are already in force in different cities and States in the country. The present ordinance restricts the sale of these narcotics to physicians' prescriptions, and provides for a penalty ranging from $25 to $100 for a violation of the Act.

An Important Action was taken this year by the American Medical Association in granting pharmacists the privileges of membership in the Section on Materia Medica and Therapeutics. If chemists secure the approval of the county Medical Society they are eligible now to join the A.M.A. This will give the leaders of the two professions a chance to debate subjects of mutual interest, and to arrive at a more amicable understanding with each other.

Pharmacy Scholarships.—Three or four State pharmaceutical associations have scholarships in as many colleges of pharmacy. Among these are the Associations of Massachusetts, New Jersey, and Texas. At the annual meeting a few weeks ago, the Massachusetts Association decided to continue their scholarship in the Massachusetts College of Pharmacy at Boston, and the other Associations will doubtless take the same action when they convene in annual session.

The Drug-trade of the Country had a vice-presidential possibility in the person of Mr. C. T. Walbridge, one of the prominent wholesale druggists of St. Louis. Mr. Walbridge's name, however, was not presented to the Republican Convention in Chicago, and now his friends propose to name him for Governor of his own State of Missouri. The drug-trade would of course like to see Mr. Walbridge secure some political honour of moment. He was at one time Mayor of St. Louis.

Slot-cures.—America bids fair to compete with Germany in the development of automatic machinery for the sale and delivery of goods. Recently a nickel-in-the-slot affair was placed outside a pharmacy in Boston, and it will be possible to secure from this machine remedies for any one of a dozen different ailments. You can drop a nickel in the hole and get a cure for headache, coughs and colds, constipation, indigestion, toothache, stomach-ache, and almost anything else in the category of human ills. Very soon doctors and chemists will be entirely unnecessary.

Re-registration.—In some States pharmacists are compelled to undergo annual re-registration at an expense ranging from $1 to $3. In Illinois many of the chemists have failed to renew their certificates from year to year, and recently the State Board of Pharmacy instituted actions against a number of them, with the result that fines were imposed upon these delinquents of $20 each and costs. Other actions will probably be taken from time to time. The practice of re-registration is followed for the purpose of securing funds with which to support the Board of Pharmacy and to obtain the enforcement of the pharmacy statutes.

Pharmacy Prosperous.—The report of the Committee on Trade Interests which was read at this year's meeting of the New York State Pharmaceutical Association indicated that the business-condition of pharmacy in the commonwealth had been very prosperous during 1904. This was particularly gratifying in view of the fact that trade has been more or less depressed all over the country this year. America is right in the midst of another presidential campaign, and these quadrennial affairs always disturb conditions somewhat. There is a fear every four years that another political party may be put in power, and that the tariff schedules may be tampered with to the unsettlement of the *status quo*.

The Connecticut Pharmaceutical Association, at their annual meeting held recently, decided to attempt the enactment of a law similar to that which has obtained for many years in Massachusetts, and which gives the Board of Pharmacy supervision over the issue of liquor-licences to the druggists of the State. If the Connecticut pharmacists secure the law, it will be necessary for any druggist to get a "certificate of good character" from the Board of Pharmacy before a liquor-licence can be procured from the local authorities. The Board of Pharmacy will of course have inspectors on duty, and will thus know whether a given chemist should be permitted a continuation of his liquor-privileges. If he is known to abuse them, and to run a saloon under the guise of a drug-store, he will find it impossible to continue the practice.

Colonial and Foreign News.

Odol in Russia.—The Governor of Smolensk has been informed that the Medical Council forbid the printing of the advertisements so extensively circulated in respect to "Odol." In future the only announcement permitted will be in the following terms: "Cosmetic Specific 'Odol' for washing the mouth," the place where it is sold, and the price.

Iron Pyrites Wanted.—In consequence of the diminishing supply of sulphur-containing minerals from Spain and Portugal, from which source the important German manufacturers of sulphuric acid have hitherto been mainly supplied, there is now an active demand in Germany for iron pyrites and other cheap sulphide minerals which are adapted to treatment by the standard methods of making sulphuric acid.

Spanish Olive Oil.—The following particulars of the production of olive oil in Spain are taken from a report issued by the Spanish Minister of Agriculture, reproduced in the "Moniteur Officiel du Commerce": In 1903, the area of land devoted to the cultivation of olives amounted to 1,333,303 hectares (hectare = 2.47 acres), an increase of 173,042 hectares over the average for the last ten years. The production, however, shows a decrease, being 1,975,803 quintals (quintal = 220½ lbs.), as compared with an average of 2,195,743 quintals during the last ten years. A large portion of the oil produced is consumed in Spain. The remainder is sent to France, chiefly to Nice, Aix, and Salon, where it is refined and, mixed with oil produced in Provence, consumed in France, or exported to other countries.

German Duty on Medicinal Spirits.—The Board of Trade have received information to the effect that the following alterations have been made in the official list governing the classification of articles under the German Customs Tariff: "*Mixed spirits and tinctures—medicines.*—Mixed spirits which are declared on importation as 'medicines,' apparently with a view to avoid payment of the import-duty on the alcohol contained therein, and alcoholic tinctures in respect of which a similar attempt is apparent, are dutiable as 'spirits,' especially when they contain a proportion of alcohol or drugs differing from those of regularly prepared medicines or tinctures of the kind declared. *Liquid ammonia* (including Dzondi's), when alcoholic, is dutiable at the rate of 300m. per 100 kilos., under No. 31 (*e*) 1 of the Tariff, whether perfumed or not."

Correspondence

TO CORRESPONDENTS.—Please write clearly and concisely on one side of the paper only. All communications should be accompanied by the names and addresses of the writers. If queries are submitted, each should be written on a separate piece of paper. We do not reply to queries by post, and can only answer on subjects of general interest.

The Metric System.

Sir,—Having had fourteen years' experience managing Manhattan pharmacies in the tenderloin of Greater N.Y. City, flowing with thousands of cosmopolitan physicians writing metric prescriptions, I have never come across the signs described by "Xrayser." "Memphis" is all right and knows his business—a dispenser can follow him and memorise all fractions of a grain in the metric equivalents in order to dispense rapidly. Yours, &c.,

New York, August 3. Fred G. Earl.

"The Fraud of the Press."

Sir,—My attention was attracted this morning to the misleading details and evident display of crass ignorance shown in the article appearing in to-day's "Daily Mail," under the heading of "Gold in Sheep's Heads." From the fact of the latter announcement occupying two-thirds of the contents-bill, while the remaining third was taken up by a very serious Government affair, one would naturally have concluded that the sheep's head business was one of vital importance to the nation. The chief point referred to is the statement of the surgeon being able to decide on the presence of gold with aqua fortis, "which gave the result as pure gold." By what deduction this definite decision was arrived at is left to the sensational imagination of the reader, who is supposed to take it for granted that the details are absolutely correct. The statement in which we are told that "Next the teeth were taken to a jeweller, who scraped off the metal, and submitted it to all the tests known" is delicious. Evidently, neither the editor nor contributor is aware that the sole contents of the jeweller's laboratory consist of a small vial (with an elongated stopper) containing nitric acid.

Yours truly,

Wigan, August 9. Arthur H. Benson.

Use of Drugs in Sight-testing.

Sir,—Much is being talked about chemist-opticians and the Spectacle-makers' Company. There is one point on which I am rather sore. In the agreement of the S.M.C. Clause VIII. the optician agrees not to use any drug for paralysing the accommodation of the eye. Now, in the recent questions of the S.M.C. there was one relating to the reversal of the shadow in retinoscopy, and I claim that all chemist-opticians should be thoroughly familiar with the use of the retinoscope and ophthalmoscope. Given that retinoscopy is desirable, how can one do it satisfactorily in all cases without the use of a mydriatic? One may use cocaine with the sole idea of dilating the pupil, but I presume it would fall under the head of "Cycloplegics." Jewellers have no experience of drugs, whereas we pharmacists are constantly observing their effects, and are as familiar with their dangers as medical men. It is annoying to have to confess to customers that "we cannot undertake to fit young children; you must go to a doctor." I have the reputation of knowing more about "eyes" than the local medicos, and as I do not undertake to treat disease, people look quite crestfallen when I send them to a doctor; they come back with a prescription for the usual panacea "Lotio acid. boric." Two of the doctors here send their patients for me to test the sight, and recently I have been helping a London M.B. in the study of refraction, for he cheerfully observes that "he doesn't know a bally thing about eyes." Under these conditions why should one be debarred from the use of cocaine?

Yours faithfully,

August 5, 1904. Quaero. (210/40.)

The Trade in Proprietaries.

Sir,—"Xrayser's" analysis of advertisements and his comments thereon suggest an interesting subject for the consideration of your readers. He has arrived at the following figures amongst others: Toilet articles, 17.5 per cent.; proprietary medicines, 6 per cent.; foods, 4 per cent.; and estimates that these may represent a fair ratio of a retail chemist's net profits. It would enlighten many of us if we could get some information in connection with the trade in proprietary articles on the following points:

(1) The proportion of an average retail chemist's gross receipts which is derived from the sale of proprietary goods other than his own; (2) the average profits upon these proprietaries; (3) the proportion which working-expenses (excluding chemist's own drawings, but including rent, taxes, wages, lighting, and all incidentals) bear to gross receipts. It would be interesting also to learn how the volume of trade in proprietary goods, in proportion to that in purely pharmaceutical products to which the intelligent chemist aspires, compares with the same of ten years ago.

If there are others who believe, as I do, that the whole question of pharmaceutical progress (professional and commercial) is concerned in the subject broached, I hope devotion to holidays will not prevent them from giving their views. Yours, &c.,

August 6. Vox. (211/29.)

Letters in Brief.

Coal-gas.—*A propos* of the recent note in The Chemist and Druggist in regard to the introduction of coal-gas, *Mr. W. Watson-Will* favours us with an old impromptu which we subjoin, and which is nearly one hundred years old:—

We thankful feel the sun and moon
  Are placed so very high,
That no presuming hand can reach
  To pluck them from the sky.

If 'twere not so, we cannot doubt
  But some reforming ass
Would soon propose to snuff them out,
  And light the world with gas!

The poet little thought his idea would come very near to realisation.

The Counter-puzzle.—*Mr. A. B. Turpin*, of Chippenham, writing with reference to the "puzzle order" in page 154 of The Chemist and Druggist of July 30, states that before reading Mr. Jones's solution he had decided that "6*d*. chinoquinine"—a preparation of Wyleys (Limited)—was meant. Mr. Turpin is unable to see any suggestion of ammonia in connection with a king.

Legal Queries.

208/71. *Bristol's* tenancy is a yearly one. His next-door neighbour has re-built, causing "Bristol's" house and shop to sink. In the event of the premises being rendered so unfit for carrying on his business, before the expiration of his tenancy, that he may be compelled to move, can "Bristol," as tenant, claim damages, and if so, on what basis should he calculate? [We think "Bristol" is only entitled to recover such damages as he has in fact sustained while he was in occupation as tenant. If he moves out before bringing an action his remedy will be gone.]

209/6. *Anxious* puts the following case: "A horse attached to a lorrey and driven by a man suddenly commences to plunge and kick. The driver, finding he cannot control the horse, lets it go and jumps off the lorrey. The horse plunges into my shop-window, doing damage to the extent of over 20*l*. Is the owner of the horse (not the driver) liable for damages?" [The question in this case is whether it was an unreasonable and improper thing for the driver to jump off the cart. If it can be proved that the horse was to the knowledge of the owner unsafe to drive, or if the driver negligently drove the horse and jumped off unnecessarily, then "Anxious" would be entitled to recover damages from the owner.]

Information Wanted.

210/31. British agents for the Fitch Typewriter Company.

209/54. Makers or agents for J. C. Tupley's American foot-wash.

213/51. What is parponal, or where can it be obtained?

213/62. Makers of, or agents for, No. 1826 eau de Cologne?

Trade Report.

NOTICE TO BUYERS.—The prices given in this section are those obtained by importers or manufacturers for bulk quantities or original packages. To these prices various charges have to be added, whereby values are in many instances greatly augmented before wholesale dealers stock the goods. Qualities of drugs and oils vary greatly, and higher prices are commanded by selected qualities even in bulk quantities. It would be unreasonable for retail buyers to expect to get small quantities at anything like the prices here quoted.

42 Cannon Street, London, E.C., August 11.

THE tone of the drug and chemical markets is fairly good considering that the holiday season is now full on, but with the resumption of the drug-auctions next week a more general demand may be expected for drugs. Although there is no striking feature to note, several articles are creating more interest than usual; among these may be reckoned tragacanth, which has substantially advanced owing to cholera in Persia. Ergot is also much firmer, and is in good inquiry for the United States. Senega has advanced a further twopence on the spot, and if current reports are to be believed there is going to be a greater scarcity than ever this year. Cardamoms have sold at improved prices, Maltese orange-peel is again dearer, and Belgian chamomiles are much higher, as the new crop is coming to hand very slowly. Quinine is reported steadier, but there is very little demand. Cod-liver oil is firmer in Norway, but no activity is looked for until the autumn. Quicksilver has been slightly reduced, but mercurials are unaltered. Menthol is easier for arrival, and American HGH peppermint oil has not moved further but is firm. Paraffin wax is rather lower. At the London bark-auctions the unit was about steady.

Subjoined are the principal alterations of the week:

Higher	Firmer	Easier	Lower
Capsicums	Cardamoms	Ammonia sulphate	Menthol (c.i.f.)
Chamomiles	Ergot	Cinchona	Oil, cotton
Chillies	Oil, cod-liver	Lead compounds	Quicksilver
Cocoa-butter	Oil, peppermint (HGH)	Pepper	Wax, paraffin
Orange-peel	Otto of rose	Turpentine	
Senega	Saffron		
Tragacanth			

Cablegram.

SMYRNA, August 11:—An active market is reported for opium for both speculation and consumption. The sales for the week ending Wednesday amount to 150 cases at firm prices, from 6*s*. 6*d*. to 7*s*. 4*d*. per lb. f.o.b. as to quality.

Heavy Chemicals.

The general position of the heavy-chemical market at all the principal centres continues to be much the same as recently reported, both as regards general demand and values. Although perhaps somewhat towards the quiet side, business is nevertheless fairly good, a moderate amount being done on forward account.

ALKALI-PRODUCE.—Caustic soda, and particularly high strength, is firm, with better demand. Bleaching-powder moves somewhat slowly for this year, but for next year the firmer tone is maintained. Ammonia alkali, soda crystals, and saltcake are also very steady.

SULPHATE OF AMMONIA keeps very dull, and late figures have not been maintained. Present nominal quotations: Beckton 11*l*. 18*s*. 9*d*., Beckton terms 11*l*. 16*s*. 3*d*., London 11*l*. 17*s*. 6*d*. to 12*l*., Leith 11*l*. 12*s*. 6*d*. to 11*l*. 15*s*., Hull 11*l*. 12*s*. 6*d*.

RECOVERED SULPHUR steadily maintains a firm position, at 5*l*. 10*s*. to 5*l*. 15*s*. per ton, in bags, free on rails, according to delivery, &c.

BROWN ACETATE OF LIME has a firmer tone, and tends towards the scarce side. Nearest figures are about 5*l*. 12*s*. 6*d*. to 5*l*. 17*s*. 6*d*. per ton, c.i.f.

LEAD COMPOUNDS are moving fairly well, but at reduced values. White acetate of lead, 23*l*. 15*s*., less $2\frac{1}{2}$ per cent., Glasgow; brown acetate of lead, 16*l*. per ton, less $2\frac{1}{2}$ per cent., Glasgow; nitrate of lead, 22*l*. 10*s*. per ton, less $2\frac{1}{2}$ per cent., Glasgow.

ZINC SALTS are in moderate request and without change. Zinc-sulphate crystals 6*l*. to 6*l*. 5*s*. per ton; zinc-chloride solution, 100° Tw., 6*l*. to 6*l*. 5*s*. per ton.

SULPHOCYANIDES continue dull, at old rates. Potassium $7\frac{1}{4}$*d*. to $7\frac{1}{2}$*d*. per lb., ammonium 95 per cent. $6\frac{1}{4}$*d*. to $6\frac{3}{8}$*d*. per lb., and barium 95 per cent. $3\frac{5}{8}$*d*. to $3\frac{3}{4}$*d*. per lb.

BICHROMATES OF POTASH AND SODA are steady. Bichromate of potash, English and Scotch deliveries, 3*d*. per lb., less $2\frac{1}{2}$ per cent. Glasgow, and export figure $2\frac{3}{4}$*d*. per lb., net, f.o.b. Glasgow. Bichromate of soda, English and Scotch deliveries, $2\frac{1}{4}$*d*. per lb., less $2\frac{1}{2}$ per cent. Glasgow, and export 2*d*. per lb., net, f.o.b. Glasgow.

MAGNESIUM SALTS are steadily maintained at recent figures, with fair request. Magnesium sulphate (Epsoms), 57*s*. 6*d*. to 62*s*. 6*d*. per ton; chloride of magnesium, 60*s*. to 62*s*. 6*d*. per ton; carbonate of magnesia, 37*s*. 6*d*. to 40*s*. per cwt.

Liverpool Drug-market.

Liverpool, August 10.

ACID, CITRIC.—Foreign is held firmly at from $12\frac{1}{8}$*d*. to $12\frac{3}{8}$*d*. per lb., c.i.f.

CALABAR BEANS.—Eleven bags have been sold at $3\frac{1}{2}$*d*. per lb.

CASTOR OIL continues in retail demand, with sales at $2\frac{1}{4}$*d*. to $2\frac{5}{16}$*d*. per lb. for good seconds Calcutta. For shipment, price has advanced to $2\frac{13}{32}$*d*. First pressure French remains unchanged at $2\frac{3}{8}$*d*. per lb. on the spot, and 21*l*. to 21*l*. 10*s*. per ton, f.o.b. Marseilles.

BEESWAX (CHILIAN).—Seventeen packages sold at 7*l*. to 7*l*. 7*s*. 6*d*. per cwt., as to quality.

COLZA OIL.—For finest French 24*l*. per ton ex quay September-December shipment, or 23*l*. 15*s*. prompt shipment, is quoted.

CORIANDER-SEED.—A ton has been sold at 20*s*. per cwt.

COPPER SULPHATE is rather easier, at 19*l*. per ton.

GINGER (AFRICAN).—A further 10 tons has been sold at 19*s*. 6*d*. per cwt. in transit.

HONEY (CALIFORNIAN).—Twenty cases of liquid have been sold at 40*s*. per cwt.

SARSAPARILLA (MEXICAN).—New York agents report a sudden advance, with sales at $6\frac{1}{2}$*d*. per lb. on the spot there.

SENEGA.—New York agents now quote 2*s*. 11*d*. per lb., c.i.f., for new crop, and report that it is coming forward very slowly.

TURPENTINE is steady at 41*s*. 6*d*. per cwt.

German Drug-market.

Hamburg, August 9.

Business in drugs is quite unimportant this week, and there are few changes to report.

CAMPHOR is very firm, 550m. per 100 kilos. being the maker's price, while in second-hands 530m. is asked.

ERGOT is tending firmer owing to the heat; 280m. is the price.

IPECAC. is quite neglected.

LYCOPODIUM is scarce, at 650m. per 100 kilos.

MENTHOL is flat, at 31m. on the spot.

SENEGA-ROOT is firm, at 630m. per 100 kilos.

STAR-ANISEED is declining, and 110m. will now buy.

SUGAR OF MILK is firm, at 110m. per 100 kilos.

Arrivals.

THE following drugs, chemicals, etc., have arrived at the principal ports of the United Kingdom from August 5 to 10, inclusive: Acid, boric (@ Leghorn), 8; acid, citric (@ Bordeaux), 6; acid. lactic (@ Boston). 20 brls.; acid, tartaric (@ Bari), 127; alcohol, wood (@ Montreal), 108; aloes (@ Mossel Bay), 65; ammon. mur. (@ Rouen), 30; aniseed (@ Konigsberg), 34; balsams (@ New York), 5 cs.; benzoin (@ Singapore), 50; canary-seed (@ Hamburg) 700, (@ bleaching-powder (@ Rotterdam) 160, (@ Hamburg) 122; Calabar beans (@ W.C. Africa), 20; camphor (@ Hong-Kong). 20; calcium chloride (@ Cologne), 98; camphor (@ Hong-Kong). 14 *in tr.*; canary-seed (@ Hamburg) 700, (@ Mazagan) 1,200, (@ Saffi) 1,100; cardamoms (@ Colombo), 43 cs.; chamomiles (@ Ghent), 6; cinchona (@ Paita) 54 serons, (@ Mollendo) 158; coca leaves (@ Colombo), 6; cumin seed (@ Malta), 215; drugs (@ Yokohama), 10 cs.; elaterium (@ Malta), 1 box; galangal (@ Hong-Kong), 200 *in tr.*; ginger (@ Bombay) 97 bgs.; guinea grains (@ W.C. Africa). 20; gum arabic (Ghatti) (@ New York) 150 bgs., (@ Bombay) 215; honey (@ Jamaica) 82 cs., (@ Dieppe) 36; lime juice (@ Jamaica), 7 cks. 47 puns.; menthol (@ Hamburg), 30; myrrh (@ Aden), 8; oil, castor (@ Antwerp) 18, (@ Calcutta) 612; oil. cod-liver (@ St. John's, N.F.) 58 cks., (@ Aalesund) 131, (@ Bergen) 17, (@ Rotterdam) 20, (@ Aalesund) 39; oils, essential (@ Naples) 11, (@ Hong-Kong) 40; oil, peppermint (@ Hamburg). 20 cs.; orris (@ Marseilles), 163 bgs.; pot. chlor. (@ Gothenburg), 10 kegs; pot.

permang. (@ Hamburg), 100; phosphorus (@ Montreal), 135 cs.; quicksilver (@ Leghorn), 500; rhubarb (@ Shanghai), 12; saccharin (@ Antwerp), 9; saffron (@ Valencia), 1; sandarac (@ Mogador), 46; scammony root (@ Genoa), 34; sodium peroxide (@ Bordeaux), 50 cs.; soy (@ Hong-Kong), 319; tartar (@ Rotterdam) 22, (@ Marseilles) 52; tartar emetic (@ Hamburg), 10; turmeric (@ Calcutta), 50; vanilla (@ New York), 11 cs.; wax, bees' (@ Mogador) 21, (@ W.C. Africa) 15, (@ Jamaica) 4, (@ Aden) 19; wax, ceresin (@ Rotterdam), 20.

Acid, Citric.—Quiet, at from 1*s*. 0¼*d*. to 1*s*. 0½*d*. per lb.

Acid, Tartaric, is also quiet, at 1*s*. for English and 11½*d*. for foreign.

Agar-agar.—Prices remain low, although an improvement is eventually looked for, as it is said shipments from Japan have ceased for some time past. Some business has been done in strips of No. 1 quality at 1*s*. 3*d*. per lb.

Aloes.—The s.s. *Norman* has arrived with 15 packages, and the s.s. *Fort Salisbury* with 50 cases, both from Mossel Bay.

Argol.—The exports from the province of Lecce (which includes the ports of Brindisi and Gallipoli) during 1903 amounted to 710 tons, of which 500 tons was exported to France and 60 tons to Austria-Hungary. In addition to this, approximately 10,000 tons of low-grade wine-lees was exported to Austria-Hungary for use in the manufacture of fertilisers.

Arrowroot.—Quiet in auction, 100 tins of St. Vincent being bought in at 3*d*. per lb.

Calabar Beans.—Small sales have been made in Liverpool at 3½*d*. per lb. in store.

Calumba.—There is a little inquiry, but the assortment on offer is very limited, and as much as 20*s*. is asked for good pickings.

Camphor.—English refined is firm at from 2*s*. 6*d*. to 2*s*. 8*d*. per lb. in bells from the refiners, and for Japanese 2*s*. 4*d*. is still quoted. A small business is reported in crude Chinese on the spot, at 195*s*. per cwt.

Cardamoms.—A fair business has been done in Ceylon-Mysores at improved prices, and there are reports current that the outlook for cardamoms generally is better.

Chamomiles.—The tenour of Belgian advices to hand this week is to the effect that the new crop is becoming scarce, and firm offers are difficult to obtain, the business being of a hand-to-mouth character. Firsts were quoted on Wednesday at 72*s*. per cwt., c.i.f., and old flowers are also firmer, 53*s*. being asked in one quarter, but to-day it would be difficult to buy at these prices. The quality of the flowers generally shows an improvement on those of last year.

Cinchona.—At the periodical auctions on Tuesday the unusually small quantity of 709 packages was offered by three brokers, and all but 248 packages of Madras chips were sold at an average unit of $1\frac{3}{16}$*d*. per lb., being unchanged compared with the previous London auctions, or about steady at last Dutch sales rates.

The following table shows the quantity of bark offered and sold:

	Packages Offered	Packages Sold
East Indian cinchona	597	349
Java cinchona	65	65
South American cinchona	47	47
	709	461

The approximate quantities of bark purchased by the principal buyers were as follows:

	Lbs.
Frankfort and Stuttgart factories	27,810
American and Italian factories	22,710
Messrs. Howards & Sons	18,270
The Imperial factory	13,809
The Brunswick factory	13,171
The Mannheim and Amsterdam factories ...	6,555
Druggists, &c.	10,076
Total quantity sold	112,401
Bought in or withdrawn	61,800
Total quantity offered	174,201

The prices paid for sound bark were as follows: South American.—Bolivian cultivated Calisaya, fair bold quill, 5⅝*d*. per lb. Java.—Good Ledgeriana root, 7¾*d*., and stem and branch, 6⅛*d*. per lb. East Indian.—Ledgeriana, original stem and branch chips, 4¾*d*., root, 5⅝d.; Succirubra, original stem chips, 2¾*d*., and branch, 1*d* to 1½*d*.; Officinalis, fair to good, original stem, chips and shavings, 4*d*. to 5½*d*., ordinary 2*d*. to 2¾*d*., good renewed ditto 5¼*d*. to 6¼*d*., branch 1½*d*. to 3¾*d*., and ordinary to good root 2*d*. to 6⅜*d*. per lb.

The auction to be held at Amsterdam on September 1 will consist of 8,184 packages Ledgeriana, etc., 896 bales and 418 cases of Succirubra.

Cocoa-butter.—At auction 45 tons of Cadbury's A brand sold at from 11⅞*d*. to 1*s*. 0⅛*d*. per lb., being ⅜*d*. dearer.

Cream of Tartar is steady, at 83*s*. 6*d*. per cwt. for 99 to 100 per cent., 82*s*. to 82*s*. 6*d*. for 98 per cent., and 80*s*. for 95 per cent. powder.

Ergot.—Much firmer owing to reports of a short crop in Spain. Holders are unwilling to sell at the moment, as they anticipate higher prices later. Some common Russian has been sold at 1*s*. 3*d*., and for shipment a good business has been done at higher prices, it being said that the United States is buying. The spot price for Spanish is about 1*s*. 6*d*., and Russian 1*s*. 4*d*., but sellers are difficult to find.

Galls.—Chinese continue quiet, the usual shape being quoted 52*s*. per cwt. for arrival and plum-shaped at 54*s*. c.i.f. terms.

Ipecacuanha continues neglected, Rio offering at from 4*s*. 6*d*. to 4*s*. 9*d*. per lb. for fair to good, and Cartagena at from 4*s*. 3*d*. to 4*s*. 6*d*.

Menthol.—The market is easy, with sellers of Kobayashi brand at 12*s*. 6*d*. per lb. The same brand has been sold for October-November shipment at 11*s*. per lb., c.i.f. terms. There are sellers to-day of October-November at 10*s*. 9*d*., c.i.f.

Myrrh.—Some 20 bales have arrived and will probably be offered at auction next week. For fair Aden sorts 92*s*. 6*d*. per cwt. is still quoted, and 80*s*. for siftings.

Oil, Cassia, is quiet, with small sales of 70 to 75 per cent. c.a. at rather under 2*s*. 10*d*. per lb. spot; for 75 per cent. 3*s*. is quoted, and for 80 to 85 per cent. 3*s*. 2*d*. per lb.

Oil, Castor.—Guaranteed pure Hull make is quoted 22*l*. per ton for firsts and 20*l*. for seconds ex wharf London, for prompt or September to December deliveries.

Oil, Cod Liver.—Although the market is reported firmer from Norway, very little attention is being paid to the article on the spot, prices ranging from 150*s*. to 160*s*. per barrel, according to brand. It is thought that prices have touched bottom, and that an advance may take place when the autumn demand sets in. Our Bergen correspondent writes on August 6 that the market for finest non-congealing cod-liver oil continues firm, and holders are not willing to part with their goods, expecting an improvement in price. Some small parcels have changed hands at 160*s*. per barrel f.o.b. Bergen. The exports from Bergen to date amount to 4,016 barrels, against 1,514 barrels at the corresponding date of last year.

Oil, Peppermint.—A small spot business is reported at 15*s*. 1½*d*. per lb. for American HGH, but probably a little could still be had at 15*s*. Tin oil is scarce on the spot, and there are orders from the U.S.A. to buy certain brands, which, however, are unobtainable. Good Wayne County could still be had at 13*s*. 6*d*., and for *Todd's* brand 16*s*. is asked. For Japanese dementholised oil for September-October shipment 4*s*. 6*d*., c.i.f., has been paid, which is about steady. There is no inquiry on the spot.

Oil, Lemon.—Private advices report serious damage to the crop by storms, and the prospects are said to be poor.

Oil, Olive.—The exports from the province of Lecce, Italy, during 1903 amounted to 1,172 tons, against 2,126 tons in 1902. The United Kingdom received 713 tons.

Oil, Orange.—Sweet is firm at from 7*s*. 4*d*. to 7*s*. 8*d*. per lb., c.i.f. It is reported that there is some difficulty in fulfilling existing contracts, as present stocks are small.

Oils, Fixed.—American *Turpentine* is easier, at 40*s*. 9*d*. per cwt. on the spot. *Linseed* is also easier, at 16*s*. 3*d*. in pipes and 17*s*. in barrels. *Rape* is steady and unaltered, at 21*s*. 6*d*. for ordinary brown and 22*s*. 6*d*. for refined English, and naked Ravison is quoted 18*s*. *Cottonseed* is lower, at from 18*s*. to 19*s*. 9*d*. for refined. *Cocoanut* is firm at 29*s*. for Ceylon and 33*s*. for Cochin on the spot. *Petroleum* is steady, at $5\frac{3}{8}$*d*. to $5\frac{1}{4}$*d*. per gal. for Russian, $5\frac{1}{2}$*d*. for American, and $6\frac{1}{2}$*d*. for water-white. *Palm* remains at 26*s*. 6*d*. per cwt. on the spot.

Opium.—The London market is unchanged, with a few retail sales at steady prices. Turkey druggists' is quoted at from 7*s*. 7*d*. to 7*s*. 9*d*., and good Persian at 11*s*. 6*d*. per lb. Soft-shipping descriptions are slow of sale.

Smyrna, July 29.—The advance in prices this week has made some little progress, and the new crop continues to interest buyers. The sales amount to 53 cases of new Adette Karahissar and Yerli t.q. at the parity of from 6*s*. 9*d*. to 7*s*. 2*d*. per lb., and 22 cases old Karahissar and Yerli t.q. at 7*s*. per lb. The sales for the month of July amount to 440 cases, including 303 cases new Adette Karahissar at from 6*s*. 4*d*. to 7*s*. 3*d*., and 137 cases old Karahissar and Yerli t.q. at from 6*s*. 9*d*. to 7*s*. 4*d*.; 150 cases of the above were for local speculators. Market closes firm with buyers, and the arrivals in Smyrna to date amount to 1,880 cases, against 490 cases at the same date last year. It is said that the quality of the new Turkish opium is superior to that of last year, but the bulk of the drug is in a very soft condition, and easily turns mouldy. Orders for good new dry opium are therefore experiencing some delay in being executed. Another estimate of the new crop places it at 12,000 cases for the whole of the Turkish Empire.

Smyrna, July 30.—The sales for the month amount to 296 cases, of which 193 were for the United States, 61 for England; 26 for the Continent, and 116 on account of interior and local speculators. The general opinion of holders is that prices will be maintained until September or October, when the weather conditions for the early sowings will decide the future course of the market. It is expected that prices for the common grades will decline shortly, but those for better qualities will probably be maintained. The arrivals of opium in Smyrna to date amount to 1,790 cases, against 465 at the same time last year, and in Constantinople 617, against 37 in 1903. The Smyrna stock in first and second hands is now 4,076 cases, against 4,321 at the same period last year, and in Constantinople 959 cases, against 474 cases. From all accounts it is now thought that the crop will not exceed 10,500 cases, including Salonika and Malatia.

Orange-peel is about 2*d*. per lb. dearer, $10\frac{1}{2}$*d*. per lb. being quoted for Maltese machine-cut. This further advance is the result of scarcity, present stocks being insufficient to meet the demand before new crop arrives.

Otto of Rose.—It is reported that another leading distiller is asking 1*s*. above last year's rates, and is now offering his finest quality at 18*s*. 6*d*. per oz.

Phosphorus.—The British Consul at Lyons reports that the reduction in the output of phosphorus was general in 1903. The home consumption is stationary, and the activity of the factories is dependent on the export demand. The export of white phosphorus fell from $89\frac{1}{2}$ tons in 1902 to $61\frac{1}{2}$ tons in 1903, while red phosphorus increased from $48\frac{3}{4}$ tons to $65\frac{1}{2}$ tons for the same period.

Quicksilver.—On Wednesday the importer reduced the price 2*s*. 6*d*. per bottle, to 7*l*. 15*s*. Mercurials are unaltered.

Quinine.—A rather steadier feeling has prevailed in secondhands, and a small business has been done at $10\frac{3}{4}$*d*. per oz. for good German sulphate in bulk, but sellers are few, and 11*d*. was asked to-day. December has been sold at $11\frac{3}{8}$*d*. It is said that the failure of a small speculator may throw one or two parcels on the market.

Sarsaparilla.—Mexican is practically unobtainable on the spot, and the nominal value is about 8*d*. per lb. There is a fair inquiry for grey Jamaica, the value of which is about 1*s*. 2*d*. per lb.

Senega.—An advance of 2*d*. per lb. has taken place in the spot price, a fair business having been done at 3*s*. net, and on Wednesday 3*s*. 2*d*. was asked, with sellers of a limited quantity only at this price. The c.i.f. price, which was cabled as 2*s*. 10*d*. last Friday, has now advanced to 3*s*., with reports of "small supplies coming to hand—markets rising everywhere."

Shellac.—The delivery-market last week closed lower, August selling at from 212*s*. to 210*s*., and December 200*s*. to 199*s*. 6*d*.; but on Monday prices were dearer, especially for distant shipment, about 600 cases, chiefly December, selling at from 203*s*. 6*d*. to 205*s*. The improvement was not maintained, and on Wednesday several hundred cases sold at 203*s*. 6*d*. and 203*s*. for December, and 210*s*. for October. On the spot a steady trade has been done at full prices, including unworked TN at 213*s*. Good and fine marks of Orange are quoted at from 235*s*. to 250*s*. and AC Garnet at about 190*s*. spot. The market to-day closed steady, August selling at 210*s*. to 211*s*.

Soda Tart.—The present price of Howards' make of B.P. crystals or powder is 77*s*. per cwt, and for *Pulv. seidlitz* 64*s*. 9*d*.

Spices.—At auction on Wednesday Jamaica *Ginger* sold at full prices for good, but occasionally easier for ordinary and common. Good washed sold at 43*s*. 6*d*. to 47*s*. 6*d*., middling to fair washed at 37*s*. to 40*s*., ordinary dullish at 34*s*. to 35*s*., ordinary small and ordinary at 29*s*. to 31*s*. per cwt. Bold native cut Cochin was bought in at 40*s*., and Bengal at 19*s*. Fair Singapore *Pepper* (23) sold at $5\frac{1}{8}$*d*. for fair, and fine bold Ceylon (5) at $5\frac{1}{2}$*d*. Privately the market is easier, with sales of Singapore at $5\frac{3}{8}$*d*. for July-September and August-October shipment. *White pepper* in auction (46) sold, without reserve, at $7\frac{3}{8}$*d*. for fair. For arrival Singapore is cheaper, with sellers at $7\frac{1}{16}$*d*., and Penang at $6\frac{11}{16}$*d*., c.i.f., for July-August shipment. Penang has been sold at $6\frac{7}{8}$*d*., c.i.f. All the offerings of *Pimento* (558) were bought in at from $2\frac{3}{4}$*d*. to $2\frac{7}{8}$*d*. *Nutmegs* sold at steady prices to $\frac{1}{2}$*d*. dearer for good West Indian, and *Mace* was steady to 1*d*. per lb. dearer. *Chillies* were in good demand at dearer rates; 240 bags of Nyassaland selling at from 43*s*. to 49*s*. for fair to good bright, 39*s*. for fair red, 33*s*. 6*d*. for yellowish mixed, and 30*s*. to 31*s*. 6*d*. for dull ditto. Large red and yellowish Japan were bought in at 39*s*. *Cloves* were not offered in auction. Privately business has been done on the spot at $7\frac{1}{8}$*d*. per lb. for Zanzibar, and small sales of August-October shipment have been made at $6\frac{7}{8}$*d*., closing buyers at this figure on Wednesday. New crop positions are dearer. *Capsicums* were also dearer, fair medium picked Nyassaland (22) selling at 33*s*., good ditto at 37*s*. to 38*s*. Good red picked Ceylon (35) were bought in at 40*s*.

Strophanthus.—The present price of *hispidus* is 1*s*. 3*d*. per lb. for quantity, 4*s*. 3*d*. to 4*s*. 6*d*. for ordinary Kombé.

Tamarinds.—At the spice-auctions 60 barrels of Barbados were offered, and bought in at 8*s*. 6*d*. per cwt.

Tragacanth.—A fair business has been done, and practically all grades have advanced, especially the lower descriptions, which are now quoted 10*s*. to 15*s*. per cwt. higher. The business has principally been in values ranging between 5*l*. and 6*l*. per cwt. Fine druggists' quality is worth 13*l*. This advance is said to be due to the plague in Persia.

Turmeric.—Madras is steady at from 11*s*. to 13s. per cwt. for fair to good bright finger, and Bengal is quoted, 9*s*. to 9*s*. 6*d*. on the spot.

Wax, Japanese.—Good pale squares are quoted on the spot at 57*s*. 6*d*. per cwt.

Wax, Paraffin.—English makers have slightly reduced their prices in order to meet American competition. Refined is quoted 3*d*. to $3\frac{3}{4}$*d*. per lb.

Russian Acetic-acid Syndicate.

The "Pharmatzevtitcheski Journal" says that in the Russian Empire there are five vinegar-factories, of which three are in Poland as branches of foreign factories. Their total annual production is 2,000,000 kilos. of vinegar, which is valued at 1,250,000r. Some days ago, according to the Warsaw papers, the owners of these factories formed a syndicate distributing market among themselves, and fixed the price of acetic acid at 66r. instead of 42r. per 100 kilos., an increase of 57 per cent. The central offices of the syndicate will be in Warsaw.

The Board of Trade Returns.

The Board of Trade Returns for July are rather disappointing in spite of the fact that there were five Sundays in the month, as compared with four last year. Imports show a drop of 4,697,000*l*., and exports declined by 1,092,000*l*. Of the decrease in imports, foodstuffs are responsible for 3,657,000*l*., and raw materials were 730,400*l*. less, the only bright feature in this department being an increase of 450,000*l*. in cotton. Many export items show a decrease, the largest being 487,000*l*. in manufactured iron and steel goods; and under chemicals, &c., we notice an all-round shrinkage of 122,870*l*. on a total of 897,567*l*. It may be noted, however, that for the seven completed months of this year the exports under this heading amount to 8,250,942*l*., or 84,856*l*. more than the corresponding period of last year, which is satisfactory. And as regards the total trade so far this year, imports have increased by 6,806,500*l*. and exports by 502,080*l*.

The export of drugs and medicinal preparations for the seven months amounted to 737,956*l*., against 777,927*l*. for the corresponding period of 1903, or 40,000*l*. less. The imports and exports of quinine and quinine salts have been as follows:

—	1902	1903	1904
	oz.	oz.	oz.
Imports.			
July	67,026	28,003	114,780
January-July ...	898,704	293,773	782,180
*Exports.**			
July	72,429	72,209	37,968
January-July ...	365,143	416,599	390,213
Exports.†			
July	18,800	12,247	11,946
January-July ...	94,032	169,871	105,798

* Declared as British. † Declared as Foreign.

It will be observed that the imports have increased considerably so far this year, as compared with 1903, and that exports, especially "foreign" make, have declined.

London Drug Statistics.

The following statistics are compiled from information supplied by public warehouses. They relate to the receipts and deliveries of some of the leading drugs from and into the London public warehouses for the month of July, 1904, and to the stocks on July 31.

—	July		Stocks		1904	
	Landed	Delivd.	1904	1903	Imprtd.	Delivd.
Aloes............ cs, &c.	56	141	622	1,100	1,013	1,295
,, ...gourds	—	—	—	—	—	—
Aniseed, star ......cs	—	—	31	—	25	—
Arrowroot ......pkgs	2.012	648	12,375	13,662	12,292	13.619
"Balsams" cks, &c.	—	45	653	859	173	310
Calumba .... bgs	13	24	349	965	30	261
Camphor......... pkgs	621	336	1,207	1,599	4,657	4,369
Cardamoms...cs, &c.	833	546	3.234	2,259	4.888	3,783
Cinchona.........pkgs	1,789	762	7,033	6,420	7,741	6,166
Cochineal .... bgs	46	59	292	651	207	404
Cubebs .... ,,	—	10	1,140	1,194	120	152
Galls............... pkgs	—	346	1,614	5,822	493	3,904
Gums—						
Ammoniacum ,,	—	5	14	20	14	13
Animi .... ,,	115	137	524	316	871	572
Copal........... ,,	6.313	4.865	24.173	35.211	31,617	40,042
Arabic .... ,,	648	791	7.834	7,870	7,030	9,543
Asafetida...... ,,	—	50	289	288	629	484
Benzoin ...... ,,	73	161	1.202	1,844	1,275	1,150
Damar .... ,,	—	289	1,617	2,572	2,050	2,817
Galbanum ... ,,	—	—	3	3	—	—
Gamboge...... ,,	8	22	6	18	124	136
Guaiacum ... ,,	—	9	51	53	54	41
Kauri ... tons, net	309	172	1,224	760	1,470	1,342
Kino........... pkgs	—	4	124	151	6	17
Mastich ...... ,,	—	—	24	13	24	13
Myrrh, E.I. ,,	27	8	89	99	153	155
Olibanum ... ,,	610	157	3,699	2,701	4,387	1.424
Sandarac ...... ,,	47	67	1,058	1.359	642	716
Tragacanth... ,,	620	956	4,571	4,781	7,583	7,243
Ipecacuanha—						
Matto Grosso ,,	30	25	314	358	240	352
Minas .... ,,	—	29	67		2	99
Cartagena ... ,,	15	—	64	347	54	166
E. I. .... ,,	—	8	8		41	47
Jalap.............. bls	45	6	245	134	134	15
Nux vomica ....pkgs	—	54	687	23	927	263
Oils—						
*Aniseed, star cs	—	10	334	747	180	47
*Cassia......... ,,	—	—	95	320	146	142
Castor.......... pkgs	214	87	776	382	1,164	1,141
Cocoa-nut .... tons	27	86	120	513	418	638
Palm .... ,,	—	7	6	4	33	36
†Quinine......... lbs	1,375	1,550	212,592	205.187	27,000	18,565
Rhubarb .... chts	55	33	170	374	306	414
Sarsaparilla ..... bls	84	69	212	146	582	647
Senna......... bls, &c.	386	264	1.502	1.080	1.623	2,540
Shellac............. cs	4,345	3,798	24,846	19.837	38,036	29,292
Sticklac .... ,,	74	—	219	179	767	709
Turmeric......... tons	6	4	387	426	109	180
Wax, bees'....... pkgs	424	447	1,460	1,861	2,501	2,727
,, Japan...cs, &c.	50	9	610	390	545	318

* Stocks lying at Smith's Wharf and Brewer's Quay are not included in this return.

† Includes the quantity at Red Lion, Bull, and Smith's Wharves; also at the Docks.

Consular Counsel.

Crete.

An Austrian consular report on the trade of Canea, Crete, for 1903, states that the use of aniline dyes has increased. The better qualities are obtained from Germany, and the inferior from Greece and Belgium. The rough woollen stuffs for the peasants are dyed in Crete with indigo, and for this purpose indigo to the value of about 50,000f. was imported last year from England, Trieste, and Italy. With the increased use of the German synthetic indigo, this import is expected to decrease considerably.

Greece.

An Austrian consular report on the trade of Patras for 1903 states that Germany, France, and Great Britain supplied the market in medicinal drugs. Purchases of quinine were fairly large on account of the prevalence of malaria. This product was obtained chiefly from Germany, Jobst and Zimmer being largely consumed. Pelletier's and Howards' brands should also be mentioned, says the Consul. France and Germany supply cinchona and quinine preparations. The imports of linseed oil, of which Great Britain formerly held practically a monopoly, have fallen off considerably, owing to the fact that a linseed-oil factory was established at Eleosis in Attica about three years ago, which, together with the factory in Syra, covers the greater part of the demand.

Palestine.

It will be news to most people that Palestine is making steady progress in commerce with the outside world. The opening up of new roads and railways has supplied the impetus, and a greater movement in the export of local produce and the introduction of foreign-manufactured articles was visible last year. The imports and exports increased 25 per cent., and, next to Turkey, the United Kingdom holds the first place in the trade with Palestine. Among the articles exported from Jaffa last year was 71,160 lbs. of colocynth, valued at 3,700*l*., compared with 24,400 lbs., valued at 1,450*l*., during 1902. It was principally exported to London and Russia.

Central Italy.

Over 9,000 tons of crude alum, valued at about 6,750*l*., was exported from Civitavecchia to France during 1903 by the Société Générale des Alums Romains, besides 175 tons of sulphuric acid which was sent to Southern Italy and Sicily for the manufacture of dynamite. So far as the British Consul at Rome is aware, the company has never placed the produce of its mines on the general market. The alum is sent to Rouen, where it is refined in the company's works there, and is afterwards sold in France. The price of alum is so low that its exportation on a large scale cannot be profitably undertaken. Besides, the want of transport from the company's mines at Allumiere and the port constitute a great drawback.

Genoa.

The report compiled by Mr. Consul-General Keene on the trade of Genoa for 1903 consists principally of tables of statistics, giving the imports and exports from Genoa, Savona, Spezia, and Turin. Among the largest items which the United Kingdom sent to Genoa last year are potash and caustic soda, carbonates, chlorides and sulphates, amounting in all to 22,709 tons, or 540 tons less than in the previous year. Among the imports received at Savona were 2,155 tons of chemical products, including 1,189 tons of nitrate of soda from South America, 957 tons of sulphates and 9 tons of oxides from the United Kingdom. Carbonate of soda is no longer imported from abroad, local consumption being supplied by Italian manufacturers. In 1902, 101 tons of cream of tartar was exported from Savona, of which 68 tons went to Australia and 33 tons to other countries, but last year the exports were *nil*, as the local works have closed down for the present. A British Chamber of Commerce has recently been established at Genoa, and appears to be making satisfactory progress.